Multimedia CD-ROM Edutainment PC & Mac Games

Electronic Entertainment

AMERICA'S #1 MULTIMEDIA ENTERTAINMENT MAGAZINE

CYBERSEX
Too Hot to Handle?

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26 Ways to Play at Work

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Plus: 30 Hot PC and Mac Games

An IDG Communications Publication

August 1994
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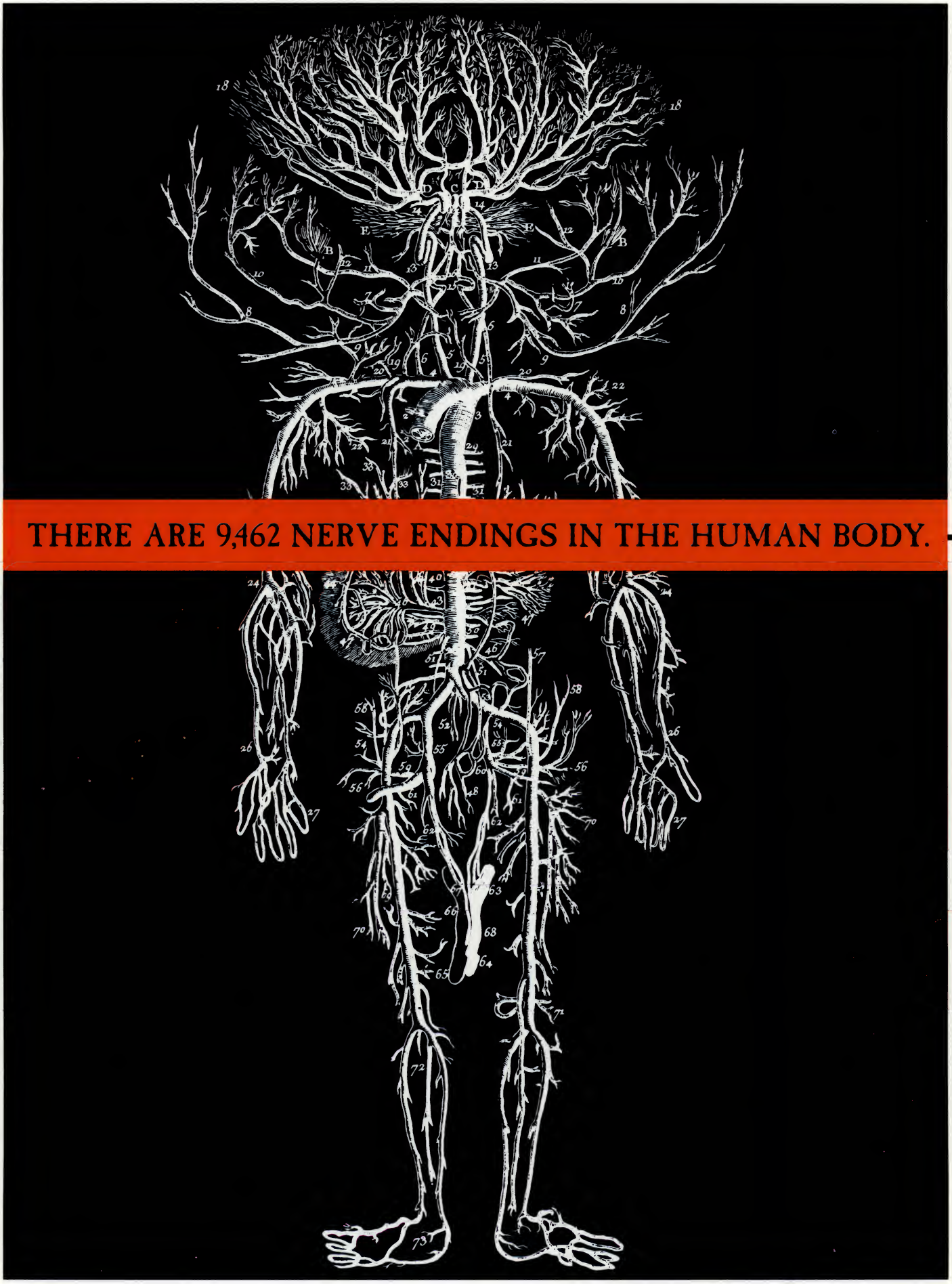

THERE ARE 9,462 NERVE ENDINGS IN THE HUMAN BODY.

Lost Divil™ ©1993 Gremlin Graphics Software Limited. ©1994 Philips Media. All rights reserved. Why the heck are you reading this? Don't you have better things to do than waste good nerve endings on stuff only lawyers are supposed to read? Obviously, you need a Philips CD-i player.

Burn Cycle

In this live action video/computer hybrid, you play Sol Cutter, data thief, whose brain's been downloaded with a 24-hours-til-you're-dust computer virus. Coming this fall on CD-i and CD-ROM.

WHY WASTE THEM ON "LOVE CONNECTION."

You are Mutt, a grumpy little hornhead, wending your way through the treacherous Labyrinth of Chaos in search of the mystic pizza. Coming this summer on CD-i, CD-ROM and PC Floppy. (Optional Digital Video cartridge required for CD-i.)

Litil Divil

Your job is to waste the mutants and hybrids who inhabit 10 post-apocalyptic landscapes. Expect to be taunted and teased by in-your-face animated foes. Coming this fall on CD-i. (Optional Digital Video cartridge required.)

Mutant Rampage: Body Slam

PHILIPS MEDIA

CD-i

Most of what's on TV can be summed up in one word: lobotomy. Which is why Philips has come up with three new exclusive games. All with retina-searing graphics and ear-bending sounds. Now that you know this, why just sit there when you have 9,462 anxious nerve endings just begging for the controls.

Now, for a mere $299, you can introduce your nervous system to the new Magnavox 450 CD-i player. For more input, dial 800.824.2567

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COVER MONTAGE BY PAUL MORRELL; FIGURE BY EWASKO©/IMAGE BANK

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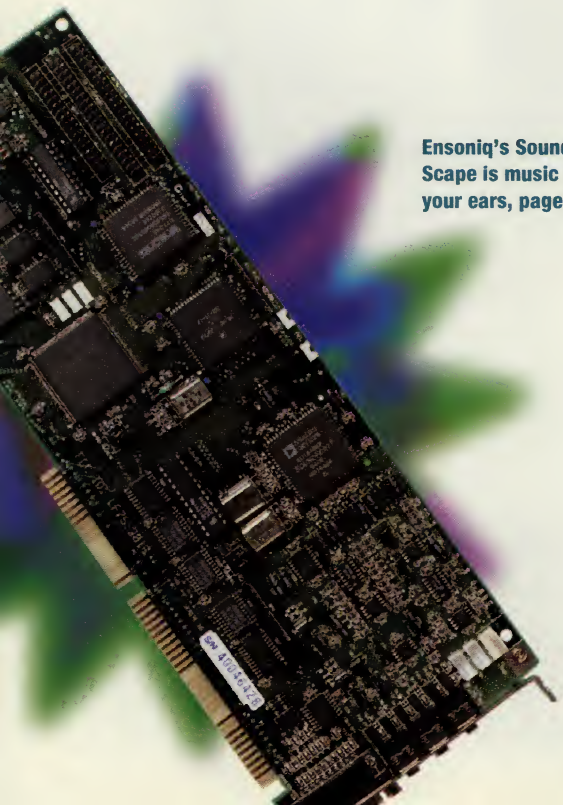

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For sound advice see S.O.S. on page 106.

Editor's Page

Gina Smith

Sex Sells

They tell me I'm a prude. And maybe I am. Even if you can't tell from this month's racy cover, never mind my tender feelings. These days, sex sells software.

Any way you look at it, sexy software is one of the fastest-growing genres of interactive electronic entertainment. Some pundits go so far as to estimate that nearly two-thirds of all male computer users have dabbled in adult software at one point or another. That's why this month's cover story investigates erotic software.

Like it or not, the trend isn't going away. For one thing, erotic images are almost as old as civilization itself. Prehistoric cave paintings often depicted fertility rites, and historians say that naughty stories were among the first print jobs to roll off the Gutenberg presses nearly half a millenium ago. Since then, erotica has led new technologies like VCRs into the mainstream. It's no big surprise to find nudity and sexual situations turning up on PC and Mac screens.

So should *Electronic Entertainment* cover adult software? We have no choice. Whether you love it or hate it, this major trend in interactive entertainment has important implications for games and multimedia. While explicit discs are already earning attention from would-be regulators, sex is increasingly popping up in mainstream games and titles as well.

As *Playgirl's* former editor in chief Nancie S. Martin points out in "CyberSex," page 34, sex in software is here to stay. Even if you're opposed to the genre, you absolutely need to know what's going on.

Of course, sex isn't the only topic in this issue of *E2*. You'll also find out how to create your own virtual reality ("Do-It-Yourself VR," page 50), learn the cleverest ways to sneak in some computer fun at the office ("Playing Games at Work," page 59), and check out the best games for the Sega CD system ("Sega CD Champions," page 43).

If that's not enough, turn to Sharp Edge to stare down an online gang, visit the e-mail addresses of the rich and famous, and make your own CD-ROMs. Flip to Spotlight for reviews of Compaq's multimedia machines, Apple's electronic camera, and Heart's disastrous new multimedia title. Tech Shop looks deep inside CD-ROM discs and video cards. And State of the Game dishes the dirt on MegaRace, The Big One, Aces of the Deep, and 12 more hot games.

Got a comment about this month's issue? Email me at OCGINA@AOL.COM.

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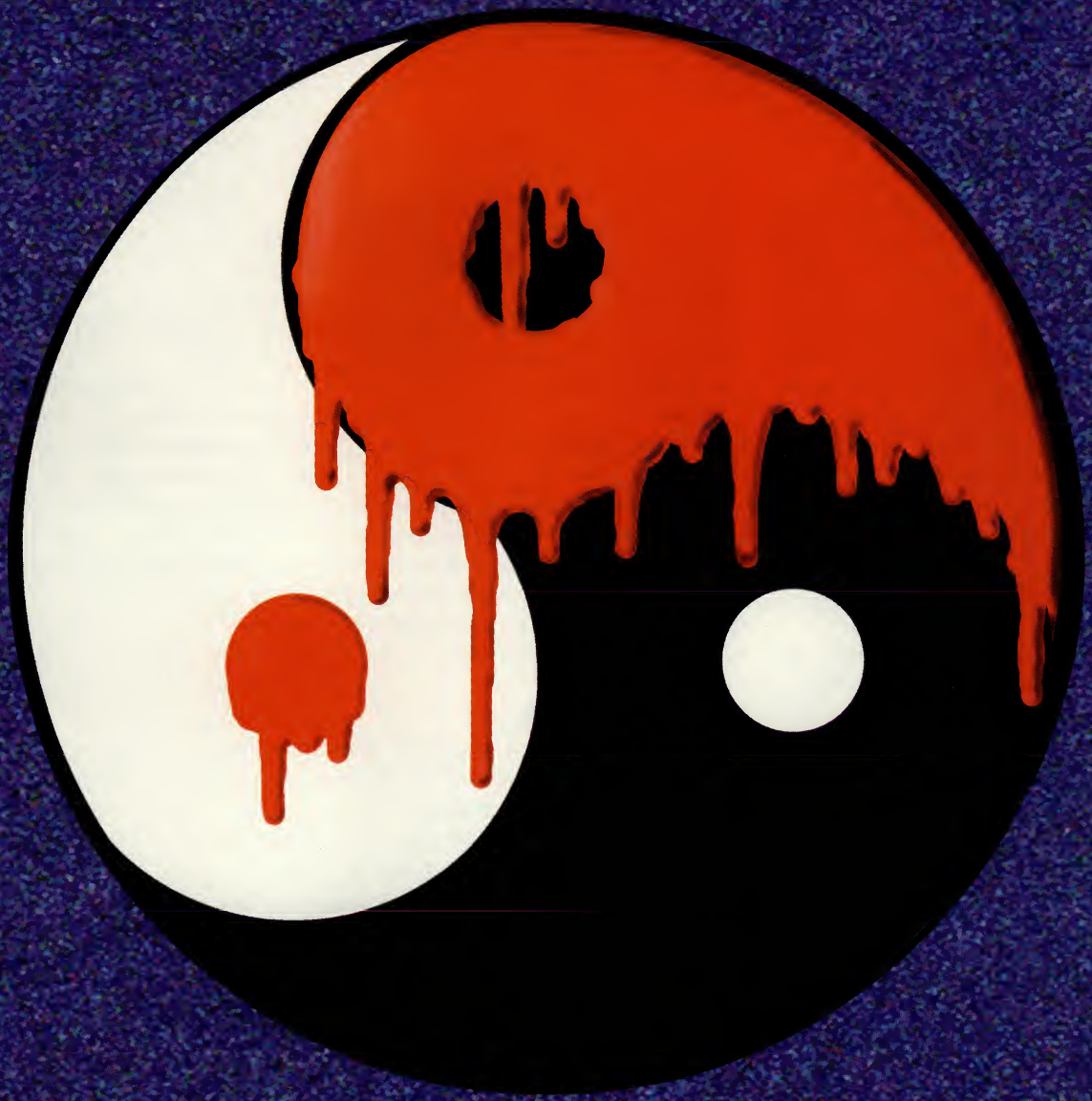

FIND THE WAY...

E2 Mail

My Cheatin' Heart

I have just read *E2* Mail in your May '94 issue (page 6) and am very disturbed by the letter about your game-cheating article ["How to Cheat (and Beat) PC Games," February 1994, page 64]. I know from my personal game-playing that getting a hint or getting to another level with a cheat is really half the fun. And this guy is talking about how crime is on the run and moral standards are declining—what does that have to do with computer games? Maybe he should run for president.

Keep the hints coming!!!!

Daniel Saulpaugh
Harrisburg, Pennsylvania

Look for the Psst! box accompanying the reviews in our State of the Game section. You'll find some great hints on how to beat today's toughest titles. —Ed

E2 Poem

I like your content, I like your style
I like Gina Smith's Mona Lisa smile.

Tom Fiedor
Via CompuServe

Ode to the CD^{32}

I am writing this letter to express my disappointment in your measly coverage of the CD^{32}.

The media continues to offer up companies' press releases to hype products regardless of their capabilities. The Philips CD-i is equivalent to a 286 machine with EGA graphics and a very slow CD-ROM drive. But no review I have read recently mention these facts. Compared to new machines, the CD-i looks rather flat. The Jaguar? Atari's president, Sam Tramiel, has a very long history of, shall we say, overstating the facts. Remember the ST? I won't be shocked if by September—when the CD-ROM drive add-on is due—Atari starts playing the "in time for Christmas" theme.

Right now, the only advanced machines really available are the 3DO and the Amiga CD^{32}. The CD^{32}'s technology may not be earth-shattering, but its performance is easily comparable to that of all the other platforms. And then there's the price: You can buy a CD^{32} and ten programs for the price of the 3DO alone! There are over 50 titles available now for the CD^{32}, with a bunch more coming.

The Amiga CD^{32} is a valid entry in the battle for the top of people's TV sets and worth some coverage.

Ken Bethards
Operation Provide Comfort, Middle East

Sorry to disappoint you, Ken. We were planning to give the CD^{32} full coverage in last month's "It's War" feature (page 48) on the battle among CD-based gaming systems. But when Commodore liquidated itself, the CD^{32} went down the drain with it. —Ed

Speak Your Mind

Maybe I just don't get it. I subscribe to your magazine for one reason: to find out about games before I buy them. With no return policies at 99 percent of all software stores, it is imperative to know about a game in advance.

Out of the 120 pages in your June issue, I counted (not including ads) 35 pages of absolutely nothing worthwhile. If I counted the ads for programs that are in the "delayed" stage I really would be sick. How about a survey of subscribers and buyers to see if we really want features like "Pump up the Video" or "Now Starring on a Computer Near You." My money is paying for this magazine to go to print. I don't go to a Yankee baseball game to see how bats are made or gloves are stitched. Please ask *us* what should be in the magazine.

Len Cyberman
Norwalk, Connecticut

E2 isn't just about games. We also cover interactive electronic entertainment of all sorts. But we are interested in your opinions. There's a fax survey on page 105 in the June issue, and we'll be running more surveys in the future. We do want your feedback! —Ed

For Whom the Bell Tolls

As a longtime reader and subscriber of *PC Games/Electronic Entertainment,* I have watched the many changes that have occurred to the magazine—some good, others not so good.

Your favorable review of Packard Bell equipment has to be a new low point in the credibility of the magazine, and calls into question the veracity of all other reviews you publish ("Packard's Bells and Whistles," June 1994, page 22).

To the best of my knowledge, no reputable computer magazine has ever bothered to review *any* Packard Bell computers, probably to avoid embarrassing the company by reporting on its quality and performance versus its competitors'. I know several people who bought these clunkers and experienced untold agony from these unreliable, weak machines. I would be hard pressed to think of a worse computer on the market.

There comes a point when even long-term customers give up and take their business elsewhere, and I for one am at that point. I will not renew my subscription at the end of the year.

Michael L. Hickey
Via Fax

Our review of the Packard Bell Pentium Multimedia System was just that: a review of a single system, not a judgment on an entire company. We do not judge a product on the merits—bad or good—of past products from the same company.

Yes, there have been problems with the quality and performance of previous Packard Bell systems, but the company has made great strides in the design and development of their PCs. The multimedia model we reviewed in the June issue was as well constructed as many of its competitors. —Ed

Got something you want to get off your chest? Do it! Write, fax, or e-mail us at: Letters to the Editor, c/o Electronic Entertainment, *951 Mariner's Island Blvd., Suite 700, San Mateo, CA 94404; fax: 415-349-7781; MCI ID: 619-7340; and CompuServe: 73361, 265.*

WAY of the WARRIOR

Over 500 megs of hard hitting, 32-bit, 30 frames-per-second action. (More arcade-like than anything on the street!)

3-D modeled, parallaxing arenas with dynamic camera zooming. (More than meets the eye!)

60 to 80 unique moves, specials, and terminations per character. (More than mere mortals can handle!)

Nine characters plus two 3-D rendered BOSS characters. (More if you know the Way...)

universal interactive studios

3DO

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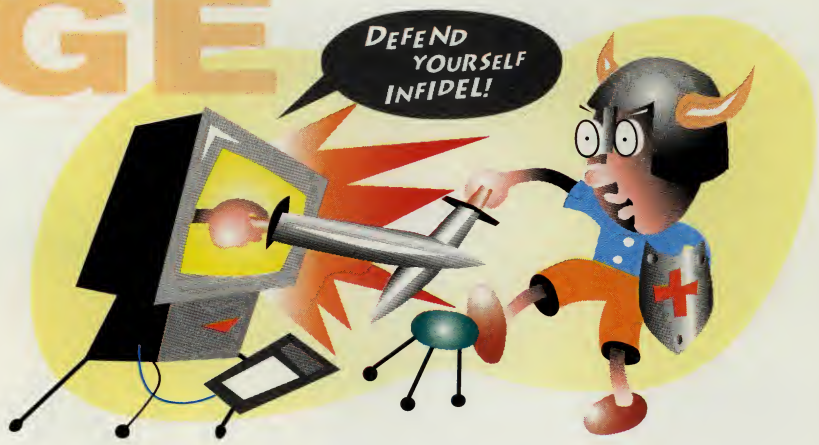
SHARP EDGE



Online Gangs

Call them online social clubs or online gangs, but one thing is obvious: **The ImagiNation Network's Medievaland** is breeding some of the more interesting new groups to hit the wires.

In Medievaland, role-playing gamers meet online to seek fame and fortune in the mystical worlds of Yserbius and Twinion. Electronic adventurers don't always want to go it alone, so players often form informal bands and fight their way through the dungeons together.

But some players are creating even more structured organizations called "guilds." With names like the Mercs, Soldiers of Fortune, KAAOS, Guardians of Twinion, and the Eternals, guilds come together for a variety of reasons. Some exist solely to help new players get their bearings, while others are Darwinian organizations where members have to fight each other for dominance. The more organized guilds even hold elections and virtual weddings among members, coordinate "fox hunts" (games of hide-and-seek in the dungeons), and arrange for real-world get-togethers.

A small but annoying minority of guilds get their kicks by hurling insults at other players and challenging them to fights and duels.

Good or evil, these guilds are taking on lives of their own. They have become communities as real as any defined by main street or city hall. (The ImagiNation Network; 800-462-4461; DOS, $9.95 per month for basic service)

—Christopher Lindquist

Here's an early version of the Jaguar CD from Atari.

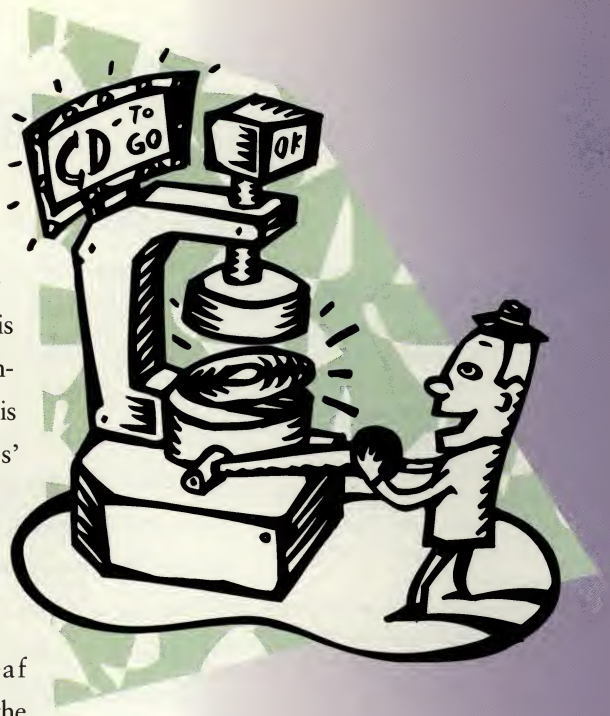
Atari's Jaguar Chases CD and Video

Atari plans to introduce the Jaguar CD add-on to its 64-bit game system this month, and it's definitely about time. Hard-core Jaguar owners have been waiting for it all year.

Original Jaguar titles are on the way, but early releases include many reworked versions of popular games from other platforms, like Activision's Return to Zork, Interplay's Battle Chess, and ReadySoft's Dragon's Lair, Dragon's Lair II, and Space Ace. Up to ten more Jaguar CD titles will be available for the holidays, including Argonaut Software and Virgin Interactive Entertainment's long-awaited Creature Shock.

Atari will give the Jaguar a second boost this fall when it releases its video-decompression cartridge. The as-yet-unpriced cartridge, based on the Motion Pictures Experts Group (MPEG) standard, will let you run games with full-screen, TV-quality video, not to mention video CDs and Philips CD-i movies. The Chaos Agenda, an interactive movie and first-person, three-dimensional fighting game, will be one of the first MPEG Jaguar titles on the market later this year. (Atari, 800-462-8274; Jaguar, $249; Jaguar CD, $199) ***–Bill Meyer***

Driving There Is Bad Enough



You get all the way down to the store only to discover the hot new title you're looking for is already sold out. And that older one your neighbor told you about is out of stock forever.

What do you do? Well, if IBM and Blockbuster have their way, you'll just buckle down and publish your own.

That's right: Rather than tear down the walls of thousands of adjacent pizza parlors to make room for more shelf space, Blockbuster and IBM are teaming up to bring "publishing-on-demand" technology to your local video store.

All you'll do is walk up to an in-store video kiosk and select the title's name on a touch screen. The system will first press game cartridges, then move to audio CDs, CD-ROMs, and movie CDs. The cartridge system is based on flash-memory technology and the CD system is based on Sony and Philips' CD-ROM technology, and Kodak's PhotoCD.

The IBM and Blockbuster deal creates two new companies: New Leaf Entertainment will handle the kiosks and content, and Fairway Technology will take care of network services. The duo will be testing the system in video stores within a year, officials say. But the specifics are still under wraps. *—David Gerding*

E-Mail of the Rich and Famous

If your heart beats a little faster every time you hear that little "you've got mail" bleep on your PC, don't miss Seth Grodin's new book, E-Mail Addresses of the Rich and Famous (Addison-Wesley Publishing; 800-447-2226; $7.95). It includes the e-mail addresses of nearly 1,000 celebrity actors, politicians, authors, academics, and journalists. Here's a sampling:

- **Douglas Adams** (Author of *The Hitchhiker's Guide to the Galaxy*): 76206.2507@compuserve.com
- **Scott Adams** (cartoonist, *Dilbert*): scottadams@aol.com
- **Edward Asner** (actor): 72726.357@compuserve.com
- **Dave Barry** (humorist, columnist): 73314.722@compuserve.com
- **Beavis** (abrasive cartoon character, Butthead's pal): beavis@mtv.com
- **Tom Brokaw** (NBC News anchor): nightly@nbc.com
- **Noam Chomsky** (linguist, philosopher, creator of controversy): chomsky@athena.mit.edu
- **Roger Ebert** (movie critic, malted milkball fan): 73136.3232@compserve.com
- **Bill Gates** (head of Microsoft): billg@microsoft.com
- **Charles Grodin** (actor): CharlesGrodin@aol.com
- **Billy Idol** (self-important musician): idol@well.sf.ca.us, idol@phantom.com
- **Penn Jillete** (comedian and magician, half of Penn & Teller): penn@delphi.com
- **Rush Limbaugh** (radio talk-show host, right-wing blowhard): 70277.2502@compuserve.com
- **Ross Perot** (billionaire, computer executive, failed presidential candidate): 71511.460@compuserve.com.
- **Jef Raskin** (inventor of the Macintosh computer): raskin@well.sf.ca.us
- **Bob West** (the voice of Barney): bobwest1@aol.com
- **James Woods** (actor): jameswoods@aol.com

–James Daly

NEWSFLASH

It's official: Mark Hamill makes his triumphant return to acting as the star of **Wing Commander III,** the video game. The former *Star Wars* hero will share the screen with porn-star extraordinaire Ginger Lynn Alan, star of such screen gems as *Ginger's Bedtime Secrets.*

■ Scientific American and Crunch Media are collaborating on a CD-ROM title based on **A Brief History of Time**, Stephen Hawking's best-selling tome on the origin of the universe. The project, subtitled An Interactive Adventure with Stephen W. Hawking, will let users participate in a variety of new experiences illustrating the scientific concepts that Hawking's work addresses.

■ You just can't monkey with **Star Trek** fans. **TV Guide** found out the hard way. The magazine staged a contest offering a prize of two tickets to a gala Hollywood screening of the final episode of the series "Star Trek: The Next Generation." People were told to send electronic or paper mail to enter, with each entry equaling one chance to win. Enterprising souls wrote computer programs to send the same piece of e-mail over and over again. More than 120,000 pieces of e-mail flooded in, with one pro submitting 15,000 e-mail messages.

■ The people who brought you the **Virtual World Entertainment** chain of virtual-reality parlors are getting serious. Serious art, that is. Walt's nephew, Tim Disney, chairman and CEO of Virtual World, is behind a **Digital Art Museum** project to incorporate visions of the Virtual World from some 50 high-tech artists. The search is on for still images and video sequences to fill a CD-ROM

continued on page 12

Goin' Down the Road Feelin' Bad

The electronic book has for years been one of the holy grails of the PC industry, but successful titles remain scarce. Unlike nonfiction reference discs that use movie clips and visual anchors to keep you interested, an engaging work of electronic fiction is, well, another story.

Trouble in Mind builds a literary and musical journey through story and song.

Trouble in Mind, an upcoming release from Jones & Jones Multimedia, will add a new chapter to electronic fiction by creating both a literary and musical journey—one creator Fred Jones calls "21st-century storytelling."

The story follows a Florida musician traveling up Highway 319 to Atlanta for a gig. On his last trip up this circuit he brought his wife, but she was murdered in a hotel room robbery. So now he's going it alone.

It's a spiritual as a well as physical pilgrimage, and it's filled with sweet southern melancholy. Jones fingerpicks his way through an 11-song musical soundtrack and peppers Trouble in Mind with photographic asides and a narrative spoken in a southern drawl that's as smooth as sweet potato pie. Look for it early this summer. (Jones & Jones Multimedia; 510-794-4834; CD for Windows, $29.95)

—James Daly

Through a Glass Clearly: The Absolut Museum

Andy Warhol and Keith Haring are just two of the famous and not-so-famous-artists who have tried their hand at creating those hip Absolut Vodka ads.

The Absolut Museum's ad/art pieces are truly international.

Now connoisseurs of this 13-year-old ad campaign can enjoy 210 of the company's masterpieces under one virtual roof.

The 3-D walls featured in the **Absolut Museum** are adorned with Warhols, Harings, and the works of many other specially commissioned painters and photographers. Click on any canvas to pull up information about the piece and its artist, and occasionally you'll discover a surprise.

Vodka drinkers from North Carolina will find this piece appealing.

Check out nine different galleries in the museum, from Statehood to Glasnost to Design, which features fashion and furniture. Statehood includes artists from all 50 states capturing the spirit of their home in an Absolut ad, while more than two dozen Soviet artists worked on the Glasnost campaign.

Net proceeds from the three-disk set will be donated to the American Foundation for AIDS Research (AmFAR). To order on CompuServe, type Go Absolut. (David S. Wachsman Associates, 800-227-6588; Windows/DOS, $29.95) –Michael S. Lasky

Star Talk: Ned Beatty

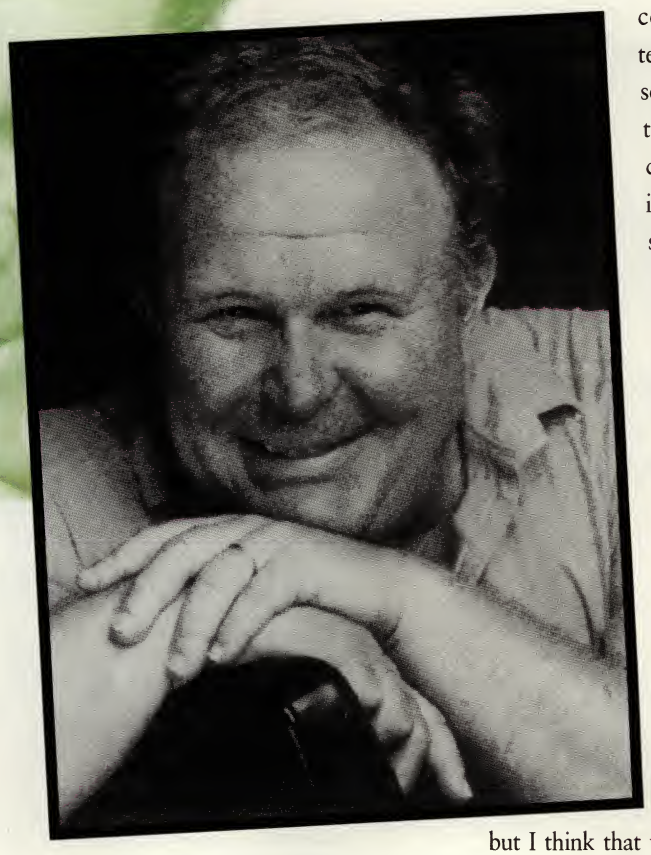
Longtime Hollywood fixture Ned Beatty is getting into the interactive act. Beatty has appeared in dozens of movies, including Deliverance *and* Superman, *as well as the TV series* "Gunsmoke," "The Streets of San Francisco," *and the critically acclaimed* "Homicide." *Technical editor Christopher Lindquist met with him during filming for the upcoming Rocket Science game, Loadstar, the first in a trilogy of titles in which he'll star as Sheriff Wompler, an old-time cop on a far-future beat.*

E2: How did you get involved in a computer game?

Ned Beatty: For some odd reason I got offers on the same day to do two different electronic games, and I decided that I'd better take one or both of them seriously. One of them was through a friend of ours who's the producer (of Loadstar), Tammara Wells. I just liked this particular project, so I decided to do it.

E2: Were you aware of what was going on in computer gaming before this?

NB: I tend to be a bit of a computer freak, but only sporadically. There are



usually two or three times during the year where I really get interested and kind of catch up on what's going on. I'm mostly interested in the computer as a tool for communications. Storytelling has one basic reason for being, and that is to create meaning and communicate it. I'm very interested in any type of storytelling, and games are a new kind of storytelling. The games that work well seem to have the same aspect as storytelling. They transfer some meaning or value.

E2: Does this give you a way of transferring meanings that maybe a traditional film could not do?

NB: I think so. I don't think we're quite at the place where we understand how yet, but I think that we're on the edge of true interactive pieces. I think (games will) just get richer and richer.

Careful With That Axe

The folks who developed the popular SimCity series are creating a new sim that immerses players in the watery wonderland of a rainforest.

Code named Eden, this new game from Maxis simulates a complex ecological system through an artificial life technique called "cellular automata." Unlike SimCity titles, which use simple squares as building units, Eden uses irregularly shaped polygons.

In SimCity, each square had equal influence on adjoining squares. That's not so in the natural world, where some areas have a much greater impact on adjoining regions than others. The influence a polygon has on its neighbors depends on the length of the sides touching other polygons. An area with many small polygons containing dozens of sides–a village, for instance–will be more volatile than one with a few large polygons and fewer number of sides, such as a mountain range.

Eden is based on 10,000 square miles of the Sarawak rainforest in Malaysia, and it's up to you to determine how it is managed. Rebuild after extensive logging, fight drug smugglers darting through mangrove swamps, or build a hydroelectric dam. The finished product is expected to arrive in stores by the end of the year. (Maxis; 800-336-2947; DOS/Windows/Mac, $70)

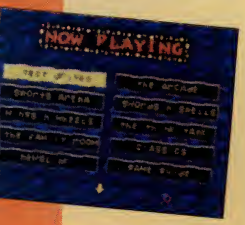
–James Daly

Carving up the rainforest can spell ecological disaster in the latest sim from Maxis.

NEWSFLASH

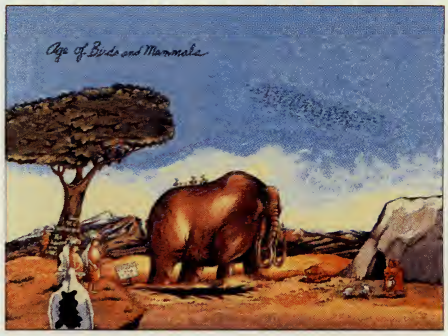
packaged with a high-quality art book. The disc will use a museum metaphor to let viewers wander galleries filled with graphic and interactive art. The pieces will also be displayed in the lounges at Virtual World sites around the country. Watch for it later this year. (Digital Art Museum; 818-584-4070)

- Look for an increasing number of book and record stores to start selling CD-ROM titles. **Blockbuster Entertainment** began selling and renting CD-ROM software last year, and **Tower Records** is also testing the waters, selling CD-ROMs in some of its Tower Video and Tower Books locations.
- If you like to hike, get your hands on **Best Foot Forward,** which makes it easy to find the best trail to suit your mood, time, and fitness level. The program lets you define the type of hike you're interested in by area, elevation gain, distance, and level of difficulty and then gives you the best rambling options. The database also includes vicinity maps, hazards, saftey tips, and whether horses or dogs are allowed on the trail. The five hiking databases cover California, Colorado, Montana, Oregon, and Washington. (GrizzlyWare; 800-258-4453; Windows/Mac, $70)
- **The Sega Channel's** national rollout is just around the corner. At a cost of $12 to $20 a month, subscribers to the interactive game channel will receive Sega news, player tips, previews, and Sega Genesis games on demand 24 hours a day. A special adapter that connects your Sega



continued on page 14

On the Far Side



The Far Side Screen Saver brings Larsonian humor to your computer.

Gary Larson knows what hens really do in hen houses—and you do, too, if you've been following his wacky, offbeat comic strip The Far Side over the years. Now Larson fans can get their Far Side fix the digital way.

The Far Side Screen Saver Collection, available from Delrina this month for Macs and PCs, includes 14 modules based on original Larson works. The creative types at Delrina expanded existing cartoons into animated screen shows—the hen house cartoon, for example, now progresses into a full-scale, multimedia egg fight.

Randomly generated animations bring to life beautifully rendered screens in The Far Side Screen Saver Collection.

Of the 14 modules, four come from a set of Larson panels entitled "The Evolution Series." Delrina took these stills and created some beautifully detailed and amusing animations that look more like screen paintings than screen savers. All the animations generate randomly, so you're constantly discovering new jokes. Like The Far Side, this material is always fresh. (Delrina; 800-268-6082; Windows/Mac, $39.95)

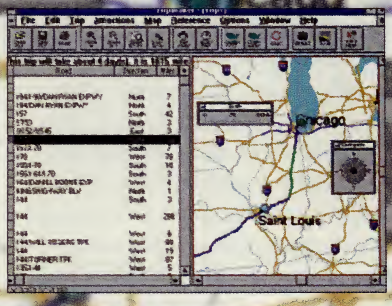
—Christine Grech

Don't Get Lost

If you've ever found yourself hunting hopelessly for the interstate, fear not. Rand McNally brings its travel expertise to your desktop, so you'll never forget the directions again. Its first software title, **TripMaker** is a guide to 641,000 miles of road and 125,000 cities and towns in the United States, Canada, and Mexico.

TripMaker includes 88 preplanned scenic tours through such locales as California's wine country. If you want to chart your own course, customizable itineraries and corresponding maps can be cross-referenced with the company's road atlas. Also available is info on the most direct or scenic routes between locations, suggestions on alternate sights in specific regions, and budget estimates for gas, meals, lodging, and entertainment. Five attraction packs are also included: Discovering History, Fun for the Kids, Scenic Tours, Urban Attractions, and Airports, Colleges & Universities, Military Bases. More free packs are available upon registration. (Rand McNally; 800-333-0134; DOS/Windows, $79.95)

–Bill Meyer



Cost Defective

Average price for a CD-ROM title in 1993: $39.30
Source: Software Publishers Association

Ever wonder why your favorite CD-ROM titles cost three or four times as much as Garth Brooks' latest CD?

No, it's not because the disc is rattling around inside its oversized box like a BB in a tuna fish can. Developers admit that costs for the often excessive packaging make up only a small portion of expenses.

And it isn't the cost of developing the software that's responsible, either. Uh-uh. Putting together a musical CD using top-flight producers, studios, and recording engineers can be just as expensive as producing a CD-ROM title.

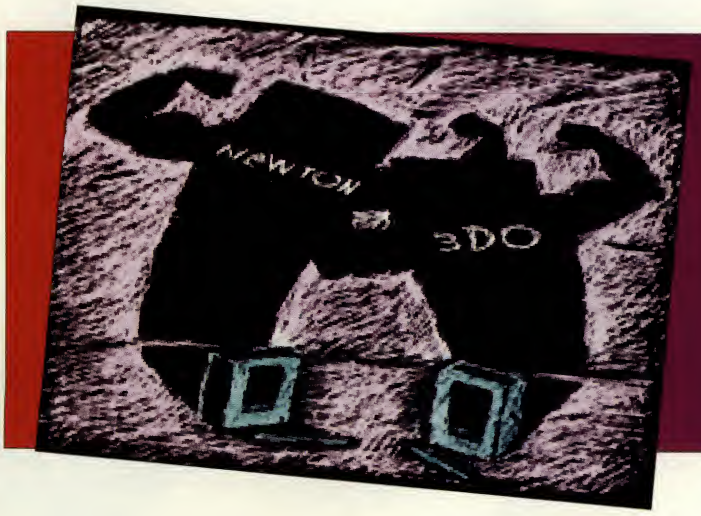
The real problem, it seems, is sales volume—or, more specifically, the lack of it. Let's do the math. Randy Thier, vice president of Sony Electronic Publishing, says it can cost $500,000 to $1 million to write and produce a high-end multimedia title. And Thier estimates that sales of even the most successful releases top out around 100,000 to 150,000 discs, and most titles sell far less.

Assuming a $500,000 development cost and 100,000 units sold, Thier says, CD-ROM producers need to charge at least $5 per disc to make back their development costs. With manufacturing and packaging costs of approximately $3 per disc, developers must charge at least $8 per disc just to break even. Equaling the typical audio CD price of $17.95 doesn't leave much room for profits after distributors take their cut. Given all these factors, a slow-selling title may never get out of the red ink.

Another key factor is that most multimedia titles have to make back their money fast, as Andrew Preston Jr., president of software developer T/Maker, points out. "A CD by the Rolling Stones or Sting may sell at a pretty good clip for two, five, or ten years," Preston says, "but a CD-ROM title is yesterday's news only a year after release."

That's why CD-ROM manufacturers charge so much. Happily, CD-ROM pricing should drop as more people buy drives and hit titles sell more copies. In fact, we've already seen the effects of a bigger market as plenty of titles now sell in the $30-to-$40 range, down from an original norm of $60 or more. Preston predicts the average price of certain CD-ROM genres will level off at between $20 and $30 in a few years. That's good news—but it looks like Garth will always be the better deal.

—James Daly



No One Wins the Hype War

Estimated worldwide sales of the Apple Newton personal digital assistant versus the Panasonic REAL 3DO Interactive Multiplayer–two of the most heavily hyped products of the past year:

Newton: 150,000 (August 1993-May 1994)
Source: Company reports; Industry analyst Pieter Hartsook
3DO/Panasonic Multiplayer: 120,000 (October 1993-May 1994)
Source: Company estimates

–James Daly

CD-ROM To Go

Truly portable multimedia is on the way. The new **CD-ROM Discman** from Sony Electronics is designed to look, feel, and sound just like a high-end portable audio CD player, but it connects to a PCMCIA Type II card slot on a portable computer to deliver double-speed CD-ROM performance.

An optional module (about $200) will include a built-in Sound Blaster-compatible sound card, an additional battery pack, and even a small speaker for a complete multimedia package. Expect the machine to cost around $300 when it ships this fall.

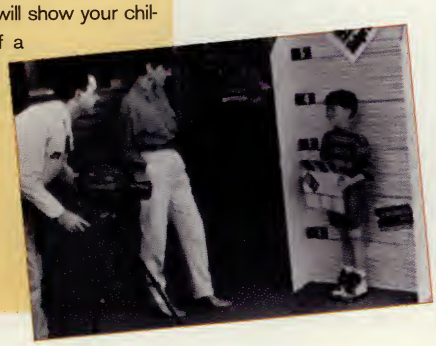
If that's not enough, Sony is also working on adapting its MiniDisc audio technology so that computers can read and record data on the 2.5-inch discs. (Sony Electronics; 800-352-7669; PC, not yet priced)

—Fredric Paul

NEWSFLASH

Genesis and TV cable makes it all possible. Approximately 50 of the 500 Genesis titles will be available every month in ten categories. Here's an early sampling—Sports Arena: NFL Football '94 Starring Joe Montana; Evander Holyfield Boxing; Wings and Wheels: Outrun 2019; Arton Senna's Super Monaco GP2; Swords and Spells: Phantasy Star III, and Shining Force.

- Look for the **Preview Machine,** a multimedia kiosk that plays hit music CDs, videos, and possibly interactive software, to show up at serious retailers soon. Initially, it's only home was at WalMart, where it finished a successful test run last spring. Now, retail chains like Tower Records and Blockbuster Video are taking a look. The kiosk holds a Philips' CD-i player and digital video decoder that allows full-screen, full-motion pictures. To hear a hit or watch a video, just touch a music or video category or artist name on the kiosk's screen.
- Got kids? Drop by your local **Blockbuster Video** store this August to make a "video ID" of them. In a free service called **KidPrint,** 2,000 Blockbuster outlets will create video records of your kids to help identify them if they disappear. Your ½-inch videotape will show your children in front of a height chart giving their names, ages, and addresses. In order to make it easier for authorities to identify them.



Get your kid video ID'd at Blockbuster.

Digital Dr. Seuss

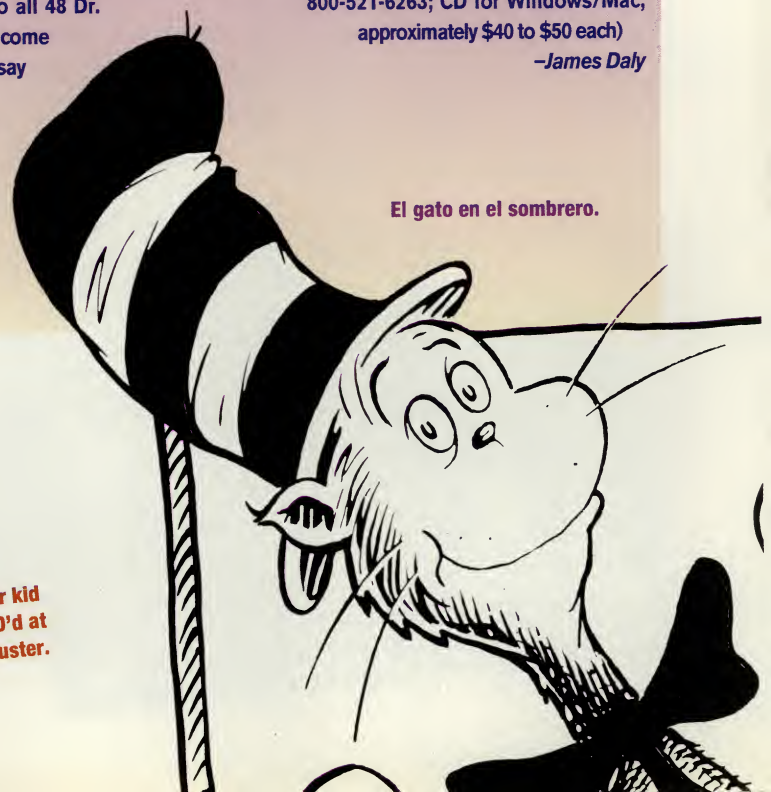
Nothing can top green eggs and ham, but beloved children's author Dr. Seuss (Theodor Geisel) is about to meet interactive CD-ROM technology.

The Living Books series—a joint venture between Brøderbund Software and Random House books—has purchased the rights to all 48 Dr. Seuss titles. The first releases will come next year, but the publishers won't say which stories will go digital first.

The Seuss books garnered the late Geisel a Pulitzer Prize in 1984 and have sold more than 200 million copies in 20 languages since they were introduced in 1937.

Like the rest of the popular Living Books series, the Dr. Seuss works will contain all the text and pictures of the original books, but they'll snap in animated effects that you can launch by clicking the mouse on selected words or illustrations. (Brøderbund Software; 800-521-6263; CD for Windows/Mac; approximately $40 to $50 each)

–James Daly



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†*Plays popular Sound Blaster™-compatible games.*

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*Call Sigma Designs to inquire about CD-ROM drives compatible with movies on CD.

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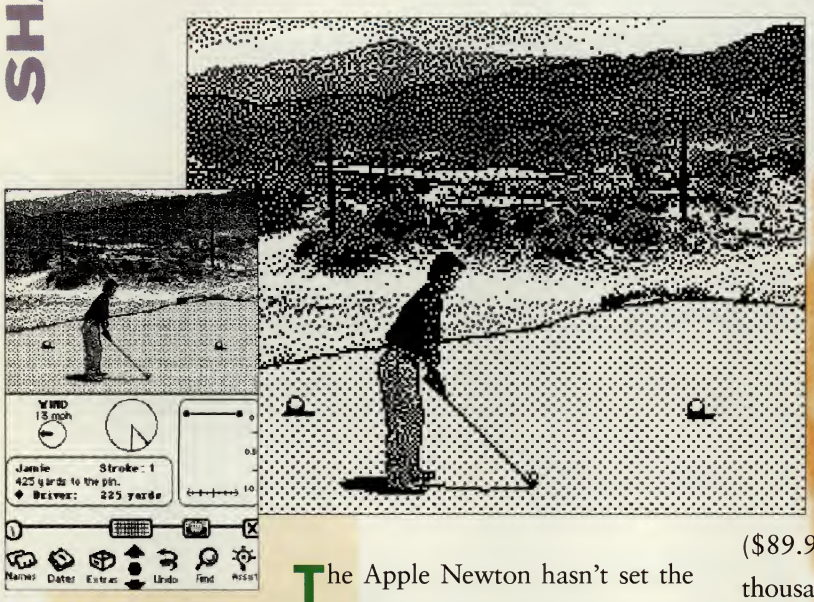
Newton Fun



Gold Tee at Big Horn from Fathom Pictures is one of the most impressive Newton games to date.

The Apple Newton hasn't set the world on fire as a personal digital assistant, but it has set off a few sparks as a game platform. (See "Big Fun, Little Boxes," June 1994, page 67.)

Gold Tee at Big Horn, Bridge, and **The Leonard Maltin Film Guide** are just a few of the latest titles out of Apple's StarCore software division, and they should keep game-playing Newtonians happy for a while.

Gold Tee at Big Horn ($49.95) lets you play the famous Big Horn course in Palm Springs, California. You can play one-on-one against the computer or bring in three other electronic duffers. Use the Newton stylus to grab a "rubber band" on the screen that determines how far, how straight, and how long your ball will fly. Touch a spot on the course and the game tells you the distance between the ball and pin. The game ships on floppy disk and requires the Newton Connection Kit for installation.

Bridge, still under development, lets you play contract bridge against the computer, or have the Newton give you lessons. Due out this fall, the disk-based program also requires the Newton Connection Kit.

Your Newton can even help you out at the video store. The Leonard Maltin Film Guide ($89.95) contains capsule reviews and information on thousands of films. Search by genre, star, director, or year. The film guide will ship in late summer on a PCMCIA card that slips right into your Newton.

And that's not all: Apple is pushing the entertainment value of the Newton by including games in its Business Solution Packs. The Executive Productivity Manager, Mobile Sales Manager, and Professional Idea Manager ($199 each) all include Jigsaw Strategy along with three business applications. (StarCore; 800-708-7827) *—Fredric Paul*

Yabba-Dabbo-Doo!

If your kids aren't sick of The Flintstones yet, check out Image Smith's new electronic Flintstones Coloring Book. Available for the Mac and PC, it'll include 30 pages worth of coloring material.

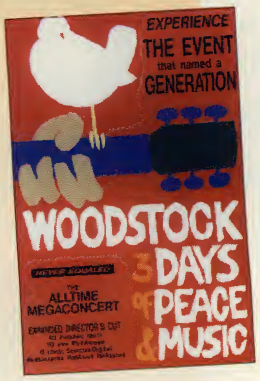
Later this year, Image Smith will follow up with a more traditional learning title for kids ages 3 to 10. Like its Yearn 2 Learn Snoopy and Peanuts titles, it'll likely include learning activities and exercises to help kids build math, reading, music, and art skills. (Image Smith; 800-876-6679; Windows/Mac, $19.95)

–Christine Grech

Psychedelia Revisted

Set the way-back machine for 1969 and get ready for **Woodstock: 25th Anniversary**, celebrating the rainy weekend when a half-million folks grooved in the ooze of upstate New York. Check out The Who and Jefferson Airplane at their vigorous best, years before they became long-in-the-tooth oldies acts. Or zone out to what Time Warner calls "the serendipity of randomly displayed images". Groovy. (Time Warner Interactive; 800-482-3766; Windows/Mac, $59.99)

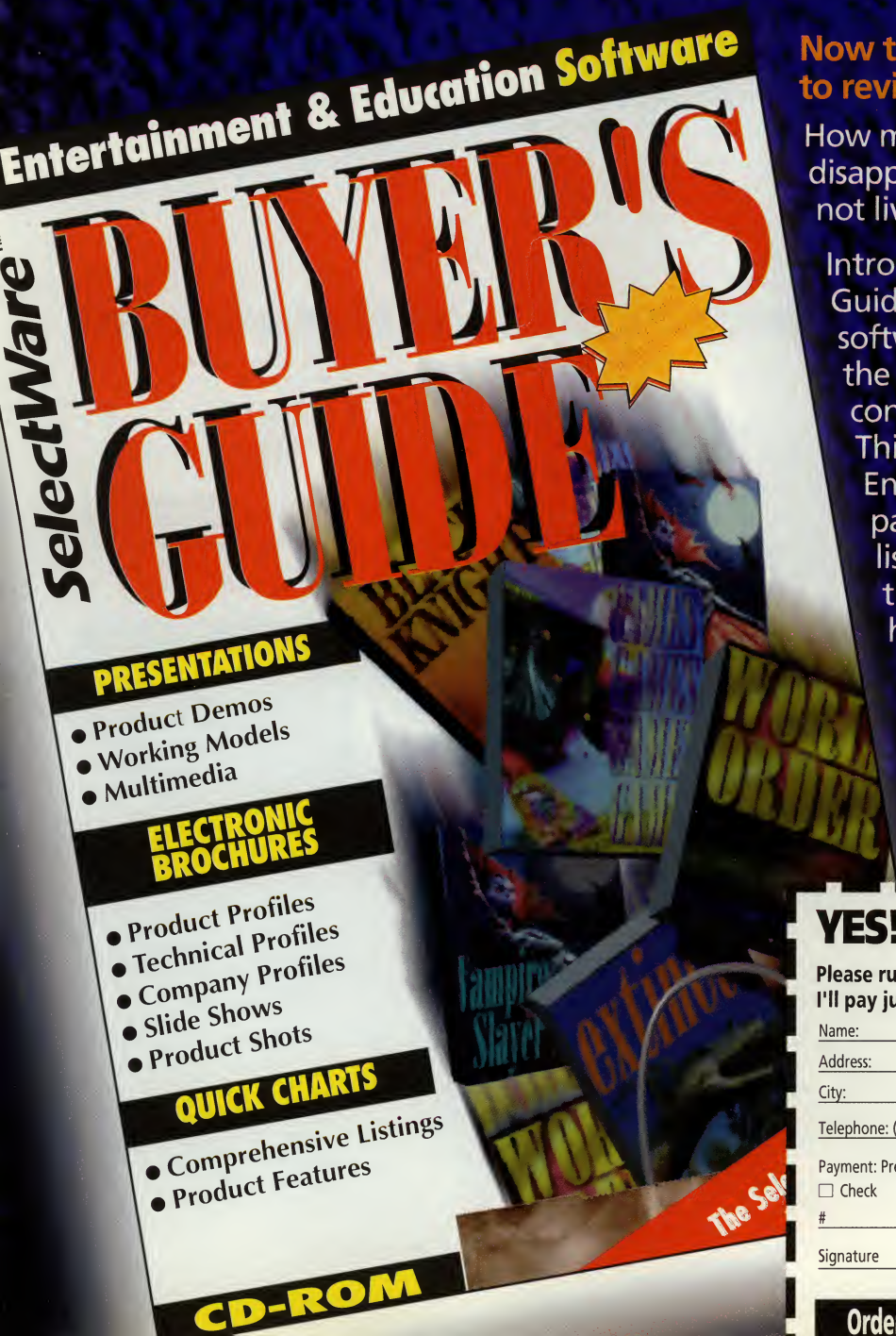
–James Daly



Relive the glories of Woodstock past.

The Ultimate Guide To Software On CD-ROM

PLAY IT SMART!



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Leader Board

The best-selling PC, Mac, and CD-ROM entertainment software

Elder Scrolls: The Arena hits the charts at No. 6.

PC GAMES

1 **Myst** Stunning visuals, haunting audio, and logical solutions will keep this revolutionary game on your play list. This month it's the No. 1 PC Mac, and CD-ROM game. (Brøderbund Software; 800-521-6263; CD for DOS, $59.95)

2 **SimCity 2000** Build a city of the future with this improved version of the classic, bumped into second after four months at No. 1. (Maxis; 800-336-2947; DOS/Windows, $69.95)

3 **Rebel Assault** Intense 3-D visuals and furious action highlight this *Star Wars* action adventure. It topped out at No. 2. (LucasArts Entertainment; 800-782-7927; CD for DOS, $63.95)

4 **Microsoft Flight Simulator 5.0** Upgraded graphics and added features have kept this hugely popular flight sim soaring high. It's been in the top five for seven months. (Microsoft; 800-426-9400; DOS, $64.95)

5 **The 7th Guest** The ghost of Henry Stauf just won't go away in this realistic and haunting drama. (Virgin Interactive Entertainment; 800-874-4607; CD for DOS, $99.99)

6 **Elder Scrolls: The Arena** Explore Tamriel's 400 cities, towns, and villages as you search for the broken staff of chaos. (Bethesda Software; 800-677-0700; DOS, $69.95)

7 **F-14 Fleet Defender** In this highly realistic WWIII air-combat simulation, you'll carry out missions for NATO or the Warsaw Pact above the Mediterranean and North Atlantic. (Microprose; 800-879-7529; DOS, $59.95)

8 **Ultima VIII: Pagan** The latest chapter of the Ultima saga deposits Avatar in a strange land loaded with detail, dialogue, mystery, and unfriendly natives. (Origin Systems; 800-245-4525; DOS/CD for DOS, $79.95)

9 **Privateer: Righteous Fire** In this Privateer add-on, return to Gemini sector's seedy underworld as a merchant, mercenary, or pirate. (Origin Systems; 800-245-4525; DOS, $29.95)

10 **Alone in the Dark 2** Edward Carnby is back to save a child heiress from a crew of supernatural pirates holed up in their Hell's Kitchen mansion. (Interplay; 800-969-4263; CD for DOS, $59.95)

Chessmaster 3000 debuts at No. 4.

MAC GAMES

1 **Myst** Stunning visuals, haunting audio, and logical solutions will keep this revolutionary game on your play list. (Brøderbund Software; 800-521-6263; CD for Mac, $59.95)

2 **SimCity 2000** Build a city of the future with this improved version of the classic. It's No. 2 after two months at the top. (Maxis; 800-336-2947; Mac, $54.95)

3 **The 7th Guest** The ghost of Henry Stauf just won't go away in this supernatural thriller. The PC hit makes its debut on the Mac charts. (Virgin Interactive Entertainment; 800-874-4607; CD for Mac, $99.99)

4 **Chessmaster 3000** This advanced chess simulation pits you against computer masters who play like the world's best players. (The Software Toolworks; 800-234-3088; Mac, $49.95)

5 **SimCity Classic** The original urban simulation challenges you to set up residential, commercial, and industrial zones; build mass transit systems; provide police and fire protection; and tax your citizens. (Maxis; 800-336-2947; Mac, $29.95)

Microcosm ousts The Lawnmower Man to steal No. 6.

CD-ROM TITLES

1 **Myst** Stunning visuals, haunting audio, and logical solutions will keep this revolutionary game on your play list. This month, it jumps from No. 5. (Brøderbund Software; 800-521-6263; CD for Windows/Mac, $59.95)

2 **Rebel Assault** Intense 3-D visuals and furious action highlight this *Star Wars* action adventure, knocked off the top after four months. (LucasArts Entertainment; 800-782-7927; CD for DOS, $63.95)

3 **The 7th Guest** The ghost of Henry Stauf just won't go away in this realistic and haunting drama—eight months on the Leader Board. (Virgin Interactive Entertainment; 800-874-4607; CD for DOS/Mac/CD-i, $99.99)

4 **Microsoft Encarta** Experience history with the help of video footage, audio clips, animations, and text. (Microsoft; 800-426-9400; CD for Windows/Mac, $139)

5 **The Print Shop Deluxe CD Ensemble** Five easy-to-use desktop publishing applications bundled on one disc. (Brøderbund; 800-521-6263; CD for Windows, $79.95)

6 **Microcosm** Enter a corporate president's body to eliminate the Grey M virus in this shooter with 3-D transitions. (Psygnosis; 800-438-7794; CD for DOS, $79.95)

7 **Ultima VIII: Pagan** The latest chapter in the Ultima saga deposits Avatar in a strange land filled with detail, dialogue, mystery, and unfriendly natives. (Origin Systems; 800-245-4525; CD for DOS, $79.95)

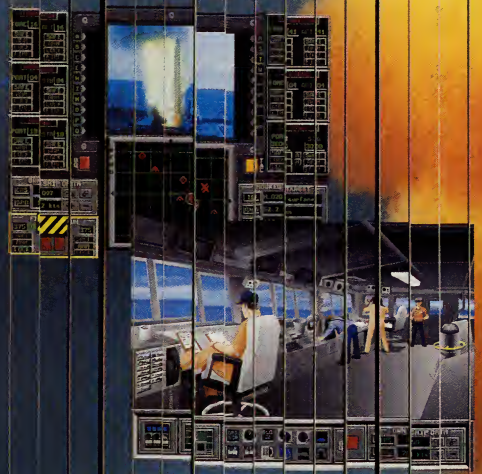
8 **Gabriel Knight: Sins of the Father** Tim Curry, Leah Remini, and Mark Hamill provide the voices in this dark tale about the search for redemption. It slips to No. 8 after two months at No. 4. (Sierra On-Line; 800-757-7707; CD for DOS, $69.95)

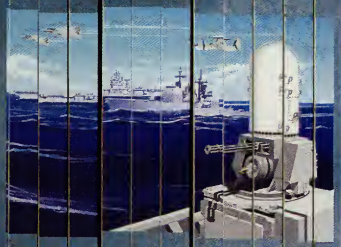
9 **Lands of Lore** Control your destiny and that of King Richard in this exciting fantasy role-playing game. After breaking in at No. 7, it falls to No. 9. (Virgin Interactive Entertainment; 800-874-4607; CD for DOS, $74.99)

10 **Comanche CD** Jump into the cockpit of a state-of-the-art helicopter and empty the sky of foes in this 3-D simulation. It slides to No. 10 after debuting at No. 8. (Electronic Arts; 800-245-4525; CD for DOS, $59.95)

The Leader Board is a compilation of top-selling software in 1,300 retail stores for March, 1994. Some titles may appear in more than one category. Source: PC Data.

WE REGRET THE APPEARANCE OF THIS AD, BUT THE MILITARY INFORMATION IN THIS NEW GAME HAS ONLY RECENTLY BEEN DECLASSIFIED.





Otherwise, we'd have to ask you to eat the evidence for security reasons.

For a real taste of military action, try leading a navy fleet through heavy Exocet missile attacks in the Falkland War. Or defending against torpedo strikes in the Persian Gulf.

Command an Aegis class cruiser, and all the ships, aircraft and submarines in the fleet. Destroy the enemy in high-tech naval warfare. Rely on state-of-the-art weapons, electronic sensors, artificial intelligence and instinct for survival. And if you're lucky, you will live to do it again.

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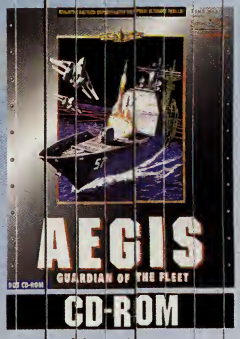

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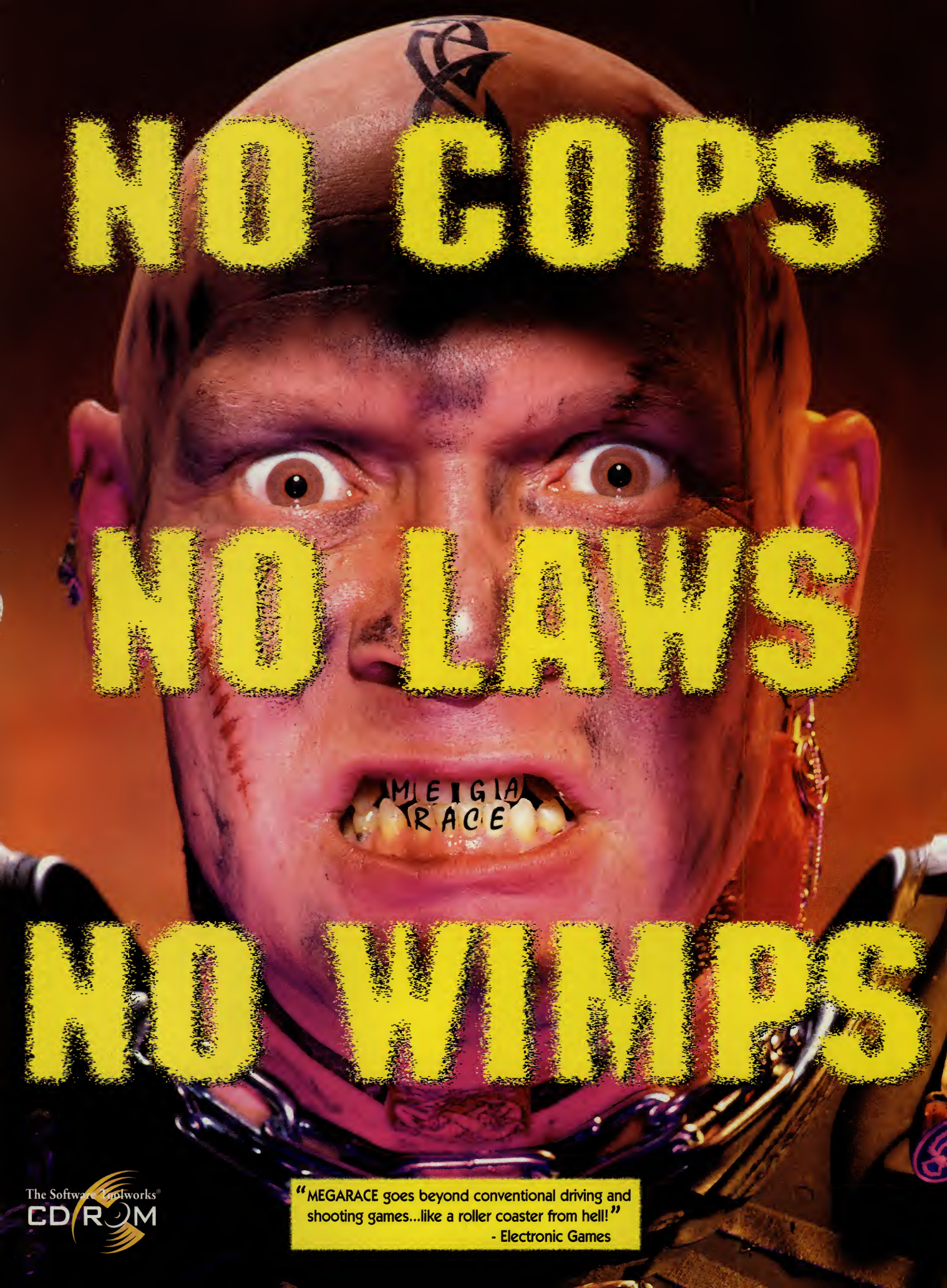

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- Electronic Games

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MEGARACE goes light years beyond today's generation of games with visually stunning cyberscapes, surreal track layouts and the kicker of them all - you're actually a gameshow contestant on VWBT (Virtual World Broadcast Television) with your host Lance Boyle.

Host Lance Boyle

You get real "television look" graphics with smooth action made possible by advanced compression techniques and real time data transfers from CD-ROM. Thrill to more than 25 minutes of digitized video that will forever change the way you look at video entertainment.

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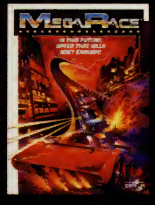
Strap in and get ready for a rollercoaster ride from hell.

WIN OR DIE!



Available on 3DO™, IBM® CD-ROM, and Sega™ CD

For the store nearest you or to buy, call

1-800-234-3088

MEGARACE™

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Circle 48 on Reader Service Card

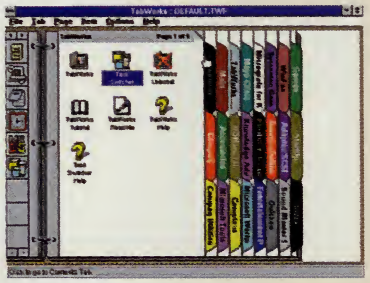
Spotlight

WHEN PRICE IS NO OBJECT

Compaq Luxury

Think of the Compaq Presario 800 CDS series of multimedia computers as luxury models. Like BMWs or Lexuses, they cost a little more, but some nice extras help justify the stiff tariff.

We tested a $3,150 **Compaq Presario 833 CDS** and found the minitower machine a well-built performer.



Tabworks offers an alternative to the standard Windows interface.

Our test model had a CPU upgrade from the standard 33MHz 486DX to a DX2 model running at 66MHz. Performance was admirably quick, but it would have been even faster with the optional 128K external cache. Windows flies (thanks to local-bus video and 1MB of DRAM), and it looks great on the 14-inch 1,024-by-768 Super VGA monitor. The standard configuration includes 4MB of RAM, expandable to 64MB, but our test machine came with 12MB. It was also equipped with a spacious 340MB hard drive (270MB is standard) and both 5¼-inch and 3½-inch floppy drives.

Multimedia chores fall to an internal double-speed CD-ROM drive and a 16-bit Sound Blaster 16 sound card from Creative Labs. Only the teensy Koss speakers and the lack of an AC adapter detracted from the high quality.

Speakers aside, the Presario includes all the little extras that make the difference between luxury computing and a digital Yugo. Niceties include a free microphone, a built-in 2,400/9,600-bps fax/modem, and the ability to upgrade to a Pentium processor.

The most important extra is software—lots of it. Compaq's Welcome Center gives you one-click controls for system setup, diagnostics, and security management. The Compaq Learning Center offers Windows-based tutorials, and Xerox's Tabworks provides a Windows shell that works like a regular notebook.

The home entertainment software bundle includes Microsoft Works 3.0, Quicken, WinFax Lite, Compton's Multimedia Encyclopedia, the Mayo Clinic Family Healthbook, the Microsoft Entertainment Pack, and Symantec Game Pack. A free month of America On-Line and Prodigy is also thrown in.

Compaq provides a three-year warranty and offers the computer equivalent of roadside assistance, with free full-time telephone support. You may chew up a portion of that warranty waiting for the machine to decompress its software bundle. The first time you turn it on, this baby needs at least half an hour to warm up.

If you want the same level of quality and extras at a lower price, the new Presario 860 CDS uses a slightly slower 66MHz 486SX2 chip, a bigger hard drive, and a faster modem and costs $800 less. (Compaq Computer; 800-345-1518; Presario CDS 833 with monitor, RAM, and processor upgrades, $3,157; Presario CDS 860 with monitor, $2,352)

–Fredric Paul

PHOTOGRAPH BY DAN CLARK

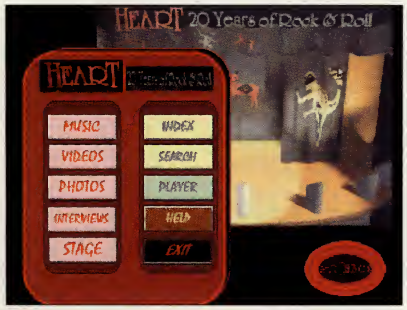
Compaq delivers plenty of software with its multimedia Presarios.

Heart Failure

You've really got to love a band to listen to the lead singer's mother tell stories about "Grampy" singing. You have to be obsessed to care that your favorite rock star's pig is named Wilbur, and that he lives with his pig-wife Onket.

Sadly, even those fans faithful to megarocker sisters Ann and Nancy Wilson, better known as Heart, will be disappointed with **Heart/20 Years of Rock & Roll.**

This CD-ROM retrospective chronicles the musical journey of the only sister-duo to boast chart toppers in the 1970s, 1980s, and 1990s. The disc opens with The Show, a morphing



Ann and Nancy Wilson morph from kids into rocker babes.

sequence that takes Ann and Nancy from kids to rocker babes.

Things go downhill from there. The

The come-hither rock of Heart falls flat on CD-ROM.

interface teases you with short audio clips of Heart tunes and adds onscreen lyrics, photos of the album covers, and snippets of videos for each album. The photos are grainy, the videos are home movies, and you hear only a little of each song. The Heart Video Pages feature seemingly unedited interviews that come off like a particularly dull PBS documentary.

There's a lot on this disc about Heart that no one will ever want to know: four hours of sound, video footage, 60-second music clips from more than 100 Heart songs, and hundreds of photos with stories and personal interviews. Ironically, the material is presented so poorly that few will manage to wade all the way through it.

If you still want to try, be warned: the greedy program requires a 386 with 8MB of RAM (a 486 with 16MB is recommended), 30MB of hard drive space, and SVGA graphics. You may need a new computer to prove you're a real Heart fan. (New CD Music Show; 408-626-1571; CD for DOS/Windows, 49.95)

–Joel Enos

Digital Travel Travails

If travel is so interesting, why are most travel guidebooks so dull? If digital multimedia is so terrific, why are CD-ROM travel guides no better?

Dream Vacations Hawaiian Style, for example, includes video clips, slide shows, and animated maps, but it still comes off as stuffy and boring. After a quick installation, you get a cheesy narrated introduction with a bland female narrator who makes a vacation in Hawaii

Dream Vacations Hawaiian Style lets you check into Waikiki.

seem like a field trip to the science museum.

When you give up on the introduction, the main menu presents an annotated map of the islands with colorful icons like a lobster for island recipes, a plane for travel information, and a dancing tiki for events. A parrot icon even pronounces common Hawaiian expressions, something a guidebook could never do.

That's about the only advantage of this disc, since the information is sketchy, the pictures fuzzy, and the videos short and pointless. (Advanced Software; 801-245-3393; CD for Windows, $59.95)

–Fredric Paul

Spotlight

GO ONLINE OFFLINE

Prodigy for Pennies

Online services are a lot of fun, but they're also expensive. **Journalist** and **Bulletin Board Note Manager,** new online software for **Prodigy** users, help solve this dilemma by letting you use them offline, too.

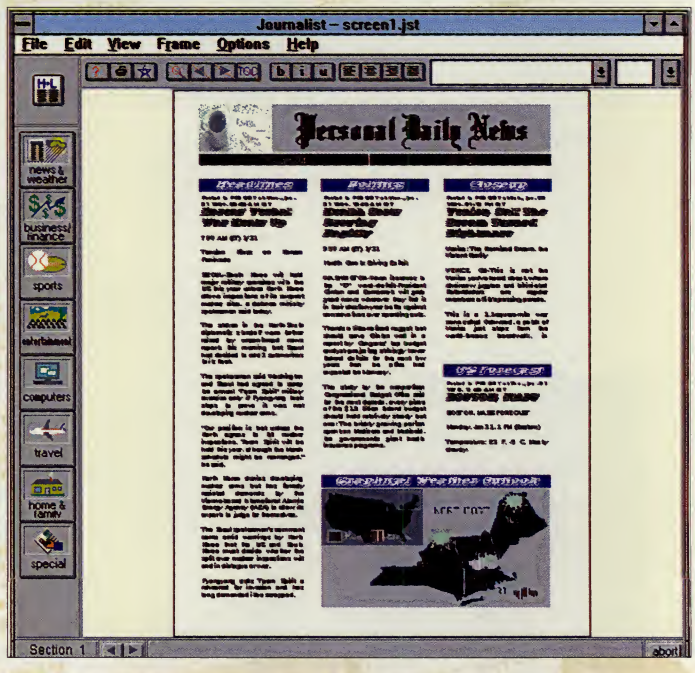
PED Software's Journalist downloads daily Prodigy news and information and presents it in newspaper form, while Prodigy's Manager automatically retrieves and stores your bulletin board messages in a Windows database.

Journalist makes you editor in chief by giving you control of the content and layout of your personal newspaper. You pick the national and local news, business tips, sports updates, entertainment listings, local weather, and travel info that you want. The content comes from Associated

Press, Reuters, Dow Jones News Retrieval, ESPN, Sports Ticker, Accu-Weather, and even Prodigy's own reporters and editors.

The placement, color, and size of stories, charts, maps, and images are up to you, although a Wizard function is available when you need help.

If you like your news in McNugget form, you can print only headlines or just the first paragraph of a story. The service is free except for downloading stock quotes or travel reservations. If you're on Prodigy, order the $80 software by typing *jump journalist.* (PED Software; 800-548-2203; Windows, $79.95)



Use the Journalist's icons to design your own version of the daily news from Prodigy.

Bulletin Board Note Manager is designed for avid users of electronic bulletin boards. Prodigy users post about 80,000 new notes a day, and the Manager lets you follow separate threads of conversation without sifting through miles of messages. You set up a custom search, and the software goes out and grabs the notes you want. Then you can browse through the messages when you're offline, instead of paying $3.60 an hour for the privilege. Order online by using Prodigy's jump feature and typing *BB Note MGR.* (Prodigy; 800-776-3449; Windows, $19.95)

–Bill Meyer

High-Speed 'Net Cruising

Mac owners who want to cruise the information highway in style should test-drive the Teleport/Mercury modem from Global Village. This high-speed V.32-standard powerhouse will have you cruising the 'net in minutes thanks to easy-to-use communications software that comes bundled with each box. Fax and character-recognition software for converting faxes to editable text files is another added bonus. (Global Village; 800-726-4821; Mac, $349)

–Christopher Lindquist

PHOTOGRAPH BY DAN CLARK

The QuickTake 100 camera grabs any image and downloads it to your PC or Mac.

Picture This

If you really want to terrify someone, point a camera at them. For reasons still unexplained by modern science, taking someone's picture humbles even the nastiest bruiser.

Apple Computer's **QuickTake 100** could change that. The QuickTake 100 is a handheld digital color camera that gives about as much fun as you can have as a point-and-click photographer. The reason? You can immediately download its images to a Mac or Windows computer via a serial cable connected to a printer or modem port. Once it's in the machine, you can easily crop, manipulate, and print the image.

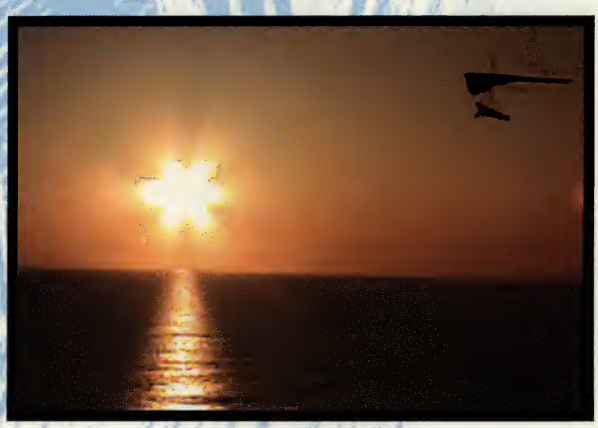
The one-pound QuickTake 100 was ostensibly designed to let designers easily integrate photos into documents or multimedia presentations. But it's also an excellent source of instant photographic gratification—sort of a modern-day Polaroid.

The camera stores any combination of up to 32 standard-resolution (320 by 240 pixels) or 8 high-resolution (640 by 480 pixels) images on an internal 1MB memory chip. They can hang out there for as long as a year, or until you erase them. Picture quality is surprisingly good—especially at high resolution—and is roughly similar to that of the image shot by a video camcorder.

The QuickTake 100 runs on three AA batteries and comes equipped with a nonremovable 50mm lens and a built-in flash. You need a midlevel Mac or Windows PC to display the pictures.

Unfortunately, there are inherent limitations in the electronic format. When the QuickTake 100 is full, it's full. It doesn't matter if visitors from Jupiter have parked in your carport or you've spotted Elvis munching a corndog at your favorite drive-in. You can't take any more pictures until you either download or erase the entire batch you've already got.

Another quibble: There is a brief delay between hitting the shutter and taking the picture, so be sure to hold still until you hear the shutter click. This could challenge your ability to capture the optimal moment. (Apple Computer; 408-996-1010; Windows/Mac, $749) *—James Daly*



California Dreamin', courtesy of the QuickTake 100.

PHOTOGRAPH BY JAMES DALY

Professor Multimedia

If outfitting your PC with dazzling sound and video is an intriguing—but intimidating—option, check out **Professor Multimedia,** a step-by-step exploration of the hows and whys of multimedia. The Windows disc (a Mac

version is scheduled for the fall) features an interactive tutorial that walks you through the basics of the technology and comes with samples of ten educational and entertainment titles that'll whet your multimedia appetite. (Individual Software; 800-822-3522; CD for Windows, $59.95) *—James Daly*

Hi-Tech Classics

Great Literature Plus For Windows has a lot more going for it than 1,900 fables, poems, plays, and novels. Author bios with pictures give every writer's birth, death, and bibliography. Mininarrations, animations, and authentic musical scores accompany many of the works. The classy interface makes searching easy. The catch? The animations are a bit corny, and contemporary literature is poorly represented. Classics lovers, though, will find plenty to enjoy. Look for online instructions about the "secret hot-spot" contest. Of the program's green italicized words that link you to related subjects, 20 contain questions. Send in your answers to win prizes. (Bureau of Electronic Publishing; 800-828-4766; CD for Windows, $64.95)

—Bill Meyer

Spotlight

A PAIR OF CARDS

Sound Judgment

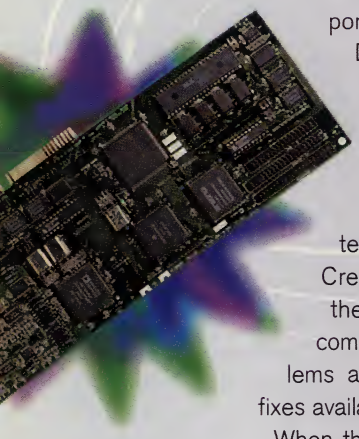
It's a sound card revolution. New cards from Creative Labs and Ensoniq can make your PC sound better than ever.

Creative's new **AWE 32** has more bells and whistles than a train museum. The card's list of features is impressive, including QSound 3-D audio, Sound Blaster 16 compatibility, replaceable SoundFonts that developers can use to customize soundtracks, General MIDI wave-table synthesis that uses samples of real instruments to create music, and digital effects such as reverb and chorus. But the card also has some flaws.

For starters, the AWE 32 requires a software driver to control its various features. That driver takes up valuable memory that you could better use for games and multimedia titles.

Even worse, some games, including Doom and The 7th Guest, have compatibility problems with the AWE 32's General MIDI support. (Running Doom with the AWE 32 in General MIDI mode rebooted my test system.) Creative admits there are the compatibility problems and is making fixes available online.

PHOTOGRAPHS BY DAN CLARK

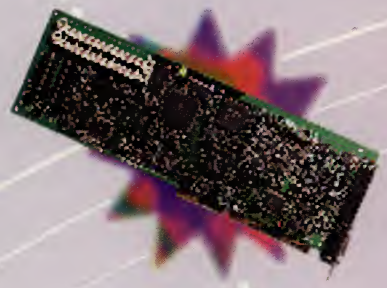


Ensoniq's SoundScape is easy to use and easy to enjoy.

When the card works, which is the rest of the time, it sounds very good, especially with the added depth supplied by a bit of reverb. A set of Windows applications, including Voice Assist voice-recognition and Text Assist text-to-speech software, lets you play with the AWE 32's features. But the card's complexity will be too much for computer novices. (Creative Labs; 800-998-5227; PC, $399.95)

Ensoniq's **SoundScape** is a different story. The company has been making professional-quality musical instruments for more than a decade and now has decided to pile everything it knows onto a $280 PC sound card.

The SoundScape doesn't have as many features as the AWE 32, but it cleverly implements the ones it has. Don't worry about setting jumpers on the SoundScape—you can configure everything with a point-and-click Windows program. Got an interrupt conflict? Just click on new IRQs until you find one that works.

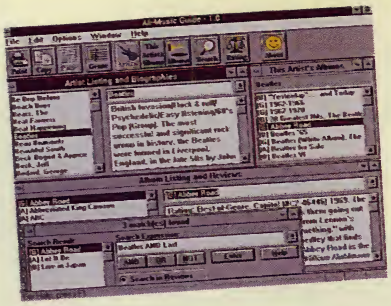


Creative's AWE 32 sports a long list of features—and a complicated setup procedure.

You don't sacrifice sound quality for simplicity, either. While the SoundScape may not be ready for the recording studio, it's more than ready for your den. Ensoniq's wave-table synthesis produces rich tones that will have you cranking up the volume. And while it doesn't claim 100 percent Sound Blaster compatibility (it won't play back compressed sound in a few games), it worked fine with everything from Doom to X-Wing.

The SoundScape won't bog down your PC, either. Its onboard processor handles all the dirty work that other cards dump on your computer's main chip. Ensoniq doesn't ship its card with a lot of bundled software, but the included Audiostation from Voyetra will let you play your audio CDs as well as MIDI and WAV files, and SuperJAM!jr. from Blue Ribbon Soundworks is a fun way to experiment with the SoundScape's abilities. That's plenty for less than $280. (Ensoniq; 215-647-3930; PC, $279)

–Christopher Lindquist



The All Music Guide runs the gamut, from a cappella to zydeco.

A Ton o' Tunes

With CD prices climbing and radio playlists shrinking, it's getting harder to discover new music. If you're looking for some help, check out Great Bear Technology's All Music Guide, a database of reviews and comments on recordings by 6,000 artists.

It's an ambitious undertaking, with more than 80 reviewers taking a poke at everything from a cappella to zydeco. As an encyclopedic electronic resource covering major artists in dozens of musical genres, the guide is unsurpassed. From crunching rock to twaddly jazz, from the heartfelt blues of Muddy Waters to soulless Pat Boone covers—it's all here.

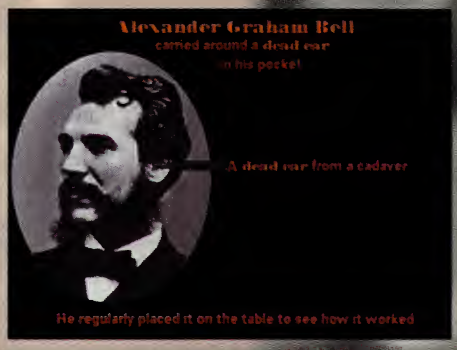
Unfortunately, the reviews are too soft. Bad—or even middling—critiques are nonexistent, making it impossible to figure out which CD to buy. In 34,000 reviews, it's hard to believe the writers didn't come across a stinker or two.

The All Music Guide is much handier as a reference tool for understanding musical cross-pollination or for browsing a favorite artist's oeuvre. You can search the listings by genre, artist, or even instrument.

Great Bear plans to follow up the expansive All Music Guide with a series of genre-specific releases—all-blues or all-jazz for example—and says this introductory package is intended to inform, not judge. But to make the guide truly useful, they should have given their reviewers a teaspoon of vinegar before sitting them down in the listening booth. (Great Bear Technology; 510-631-1600; Windows, $59)

–James Daly

An Electric Experience



A highbrow version of the old "Monty Python" television show.

Multimedia titles tend to try too hard, but **Cinema Volta** relies on subtlety and artistry to tell its story. Named after the movie theater that author James Joyce once ran in Dublin, Cinema Volta (subtitled Weird Science & Childhood Memory) is nothing if not unusual.

Artist and narrator James Petrillo weaves words and images by or about Joyce, Thomas Edison, Alexander Graham Bell, *Frankenstein* author Mary Shelley, and other personalities and topics into a multimedia pastiche about (if you can believe it) the power of electricity and its impact on human life.

The enchanting weirdness of Cinema Volta.

A combination picture book, animated movie, and performance-art piece, Cinema Volta eschews pages of gray text in favor of illustrations, photos, simple animations, clever sound effects, bits of video, and even a few words to make its points.

Organized into a dozen chapters, the disc comes off as a sort of highbrow version of the old "Monty Python" television show. While clearly enamored of its own literary pretensions, the disc retains a sense of fun as well as an indulgent attitude toward sex, drugs, and all manner of human oddities.

But while Cinema Volta is fascinating to read, listen to, and watch, it's not particularly interactive. You can choose which chapter to turn to and when to return to the main menu, but that's about it. You can't control the speed, so the pacing sometimes seems excruciatingly slow.

Cinema Volta is terrific multimedia, using innovative design to wring the most out of the technology without exposing its limitations. But if you want a true interactive experience, look elsewhere. (Voyager; 800-446-2001; CD for Mac, $49.95)

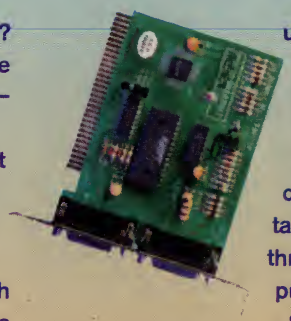
–Fredric Paul

The Joystick Connection

Can't keep your plane in the air? Do you lose control at all the wrong moments? It could be your stick—but then again, maybe it's the port.

If the port's the problem, Kraft Systems has the remedy—the Auto-Set Pro Gamecard, a joystick card that gives you all the control you need.

The joystick ports that come with most PCs, either on an I/O card or a sound card, weren't designed with gamers in mind. So even the best joystick may behave erratically, especially if you use it with a fast 486 or Pentium PC. Cheaper joystick ports often can't keep up with the computer, so vital information, like "Pull back on the stick to clear that mountain!" may not get through to the computer in time.



Several companies now sell dedicated joystick cards that you can adapt to today's faster computers. Unfortunately, most of these cards require manual adjustments or special software that takes up valuable memory.

Not Kraft's Auto-Set Pro Gamecard: It automatically senses the speed of your machine and sets itself accordingly—no dials to twiddle or software to load. If you need to make an adjustment for an over- or undersensitive game, you can modify the card's settings with a few keystrokes. Just keep in mind that if you already have a joystick port on your system, you'll have to disable it before installing this dedicated game card. (Kraft Systems; 619-724-7146; PC, $49.95)

–Christoper Lindquist

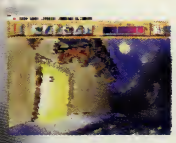
PHOTOGRAPH BY DAN CLARK

Spotlight

PRO FOR THE AVERAGE JOE

Dabble in The Arts

Dabbler features a notebook in which you can stash your works-in-progress and finished masterpieces.



Multimedia makes PCs seem easy and fun. Fractal Designs' **Dabbler** does the same thing for high-end paint programs by combining professional power with fun and appealing learn-to-draw lessons.

Dabbler is the simpler cousin of Painter, Fractal's best-selling professional art program. It uses an icon-based interface that's easy enough for young artists and cleverly mimics natural media such as paint and paper.

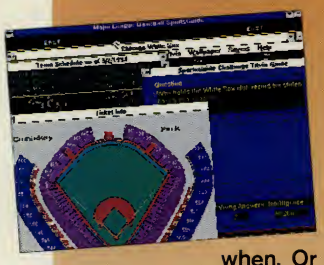
Four onscreen drawers work as drop-down menus and hold the program's 54 drawing and painting tools, 40 paper textures, millions of shades and colors, and advanced special effects including motion blur, glass distortion, and water drop. Dabbler even adds cool tool sounds, such as pencils scratching paper and paint brushes washing the page.

Half the Dabbler manual consists of tutorials from Walter Foster's *Learn to Draw* book. Fourteen animated sessions track the creation of still lifes, landscapes, animals, and portraits. The program explains the artist's techniques as it demonstrates them.

Fractal also adds two playback drawing sessions that show an artist drawing a pear and an English tavern. More demonstration than tutorial, these new sessions are longer but don't include explanations or advice. All 16 sessions are excellent, but they'd be even more impressive if you could slow them down to catch the subtleties of the artist's technique. At any speed, Dabbler is an exceptional electronic paintbox and an inspired art teacher. (Fractal Designs; 800-647-7443; CD for Windows/Mac, $99)

–Bill Meyer

If You Program It They Will Come



If you can't get enough baseball, **Major League Baseball SportsGuide with Screen Savers** from Momentum Development puts baseball graphics, schedules, and stats into a personal information manager, a screen saver, and Windows wallpaper. Plaster your favorite team's logo on your screen, or check seat assignments, standings, and even who's playing where and when. Or test your knowledge with a team trivia game. Really dedicated fans can subscribe to a special online service for daily stats from Major League Baseball's own mainframe. The National Hockey League is also available, and one covering collegiate sports is due later this year. (Momentum Develoment; 800-262-3926; Windows, $49.95 plus $29.95 per year for access to the online stats)

–Fredric Paul

PC Personalities

What do Charles Barkley and Jack Nicklaus have in common? In addition to being fabulously rich athletes, both are featured in Accolade's new series of **Personality for Your PC Screen Savers.** Each collection features 22 photos of the sports hero in action. Use them as Windows wallpaper and screen-saver slide shows. The Nicklaus collection mixes photos of the Golden Bear with shots of the courses he designed, while the Sir Charles version airbrushes out the team name on the Round Mound of Rebound's jersey. (Accolade; 800-245-7744; Windows, $14.95 each)

–Fredric Paul

The Old College Try

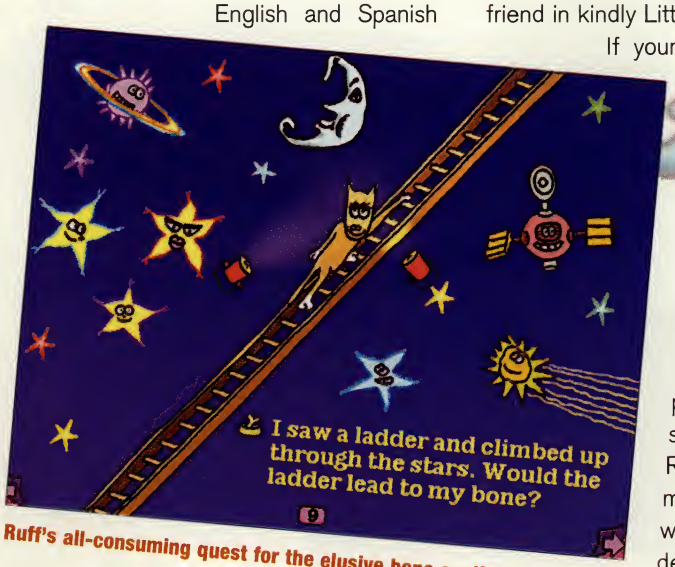
Many people think professional athletes are lazy, overpaid egomaniacs who dog it until the playoffs. These folks often prefer college sports in the naive belief that big-time NCAA action is an amateur pursuit. **Lights Out Sports Fans: Collegiate Screen Saver** caters to these academic aficionados. Pick your favorite conference—the ACC, Big Ten, Pac 10, and SEC are available, with seven more coming later this year—and enjoy silly screen savers and Windows wallpapers built around the teams' official logos. Cheesy carnivorous blimps, cartoon scoreboards, and bizarre football, baseball, and hockey games "played" by the various logos also appear. Similar products are available for Major League Baseball and the National Hockey League, and others are in the works for the NBA and the NFL. (Quadrangle Software; 800-253-8397; Windows/Mac, $55)

–Fredric Paul

Tales of Monsters, Lost Bones, and Yodeling Goo

For connoisseurs of kids' software, what could be better than the release of a new title in Brøderbund's excellent Living Books series? Easy—the release of two.

Little Monster at School and **Ruff's Bone** are for kids age 3 to 8. As with previous Living Books, the discs include English and Spanish versions and bundle a paperback copy of the story. Kids can either have the story read to them or choose to "play" on any page, discovering the secrets of the objects on the screen.



Ruff's all-consuming quest for the elusive bone continues.

In Mercer Mayer's Little Monster at School, kids follow Little Monster and his grotesquely appealing friends and teachers to school, working at ABCs, numbers, science, and other subjects. Kids will find plenty of hot spots to click on for extra action (yodeling goo that seeps from a dresser drawer, for instance) and even a choice of breakfast items (we recommend the eggs). There's also an entertaining spoof of the Goldilocks tale called "Little Monster and the Three People."

Like every real-life class, Little Monster's includes one student who just can't seem to get anything right. Yally writes his letters backward, doesn't like pets, can't grow plants, and has an attitude that needs adjustment. By the end of the story, though, Yally has found something he can do well—and a new friend in kindly Little Monster.

If your kids prefer inspired nonsense to gentle moralism, they'll go for Ruff's Bone, which sets new standards for zaniness. Designed by Colossal Pictures, the guiding concept in this story of a dog and his bone is quite simply—more! With every screen, the hapless Ruff's plight becomes more outrageous as he wanders from an underground colony of cavemen to the clouds to the bottom of the ocean in search of his ever-elusive bone.

Little Monster and his grotesquely appealing friends eat lunch.

This title has more hot spots than you can shake a bone at, from a periscope in a birdbath and Zeus hurling thunderbolts to a violin player inside a whale and singing celestial bodies.

You can't go wrong with either of these titles. Little Monster is good for you, and Ruff's Bone is just plain good. (Brøderbund Software; 415-382-4567; CD for DOS/Mac, approximately $40 each)

–Peggy Berg

Bug Love

If your kid is batty about beetles or flips over flies, check out **Bug Adventure,** an intimate journey into the land of insects. Find out which bug has an eye with 10,000 lenses, or watch a movie of a raft spider going fishing. Knowledge Adventure even tosses in a pair of 3-D glasses, so these gruesome customers practically crawl out of the screen. You'll never look at an anthill the same way again. (Knowledge Adventure; 800-542-4240; CD for DOS/Windows, $69.95; DOS/Windows, $49.95)

Bug Adventure offers a close-up look at the very strange eyewear of the fly.

–James Daly

Jam with Hello Kitty

Hello Kitty's Big Fun Piano, the first title in Big Top's Learning Circus collection, is an amusing introduction to piano and music for boys and girls. Your kids will get a kick out of the multicolored piano, the surprising animations, and the animal characters who bark, quack, and baa along with the songs. An added feature is a basic math and shape-recognition game. (Big Top: 800-900-7529; Windows/Mac, $24.95)

–Bill Meyer

Hello Kitty leads the musical ducks as they quack along to the songs.

Tube Man

Keith Ferrell

Interactive Storytelling

Have you heard the first joke of the 21st century yet? Question: How can you tell the difference between a television couch potato and an interactive-game couch potato?

Answer: The interactive-game couch potato's thumbs and fingers still move.

We've arrived, as the millennium approaches, at a crossroads in interactive gaming, and the name of that junction is television. On the technological level, much of what we hear discussed are innovations, stratagems, and approaches intended to make interactive technologies more televisionlike. On the surface, at least, this is not necessarily a bad thing. Full-motion video, human actors, sound, dialogue, and musical scores are all approaching television quality, to the benefit of the games' appearance.

It's below the surface, I think, that the dilemma is found.

Are we nearing the point where games, like television, are designed to be watched rather than experienced, observed rather than played? I believe we are, especially in role-playing and narrative games. To wit, have you noticed how much shelf space at your local software store is devoted to step-by-step guidebooks that change the gaming experience into a guided tour? You can't, as it were, become a player without a scorecard.

Most games offer only a few—sometimes only one or two—ultimately successful paths through their narratives. They are essentially linear experiences, however much their packaging and design make them appear otherwise. As such, they have a lot in common with television programs and movies. Nothing wrong with that—we are speaking, after all, of media that are among the most successful and influential inventions in our history.

But we've been promised for well over a decade that interactive entertainment would offer something different, something better—a chance to participate and explore, to become part of an imagined world, and to shape our destinies within those worlds with the same intensity we feel when identifying with a character in a good novel or movie. Only more so, because in an interactive environment we can alter or affect the character's destiny.

It may be that too much was promised. On a purely pragmatic level, the creation of open-ended, wholly interactive, fully explorable worlds that still possess some sort of structured story and character content may be too much to ask. Put yourself in the position of the storyteller responsible for such a world: How do you anticipate every possible scenario or player action? How do you ensure complete narrative consistency no matter what those actions are? How many millions of words of dialogue must you write in order to accommodate all the conceivable conversations? Add the creative, technological, and budgeting challenges and you're looking at an undertaking that dwarfs even the biggest of motion pictures. No matter how large the potential audience for an interactive narrative—and it's still tiny—it may not be large enough to underwrite such an endeavor.

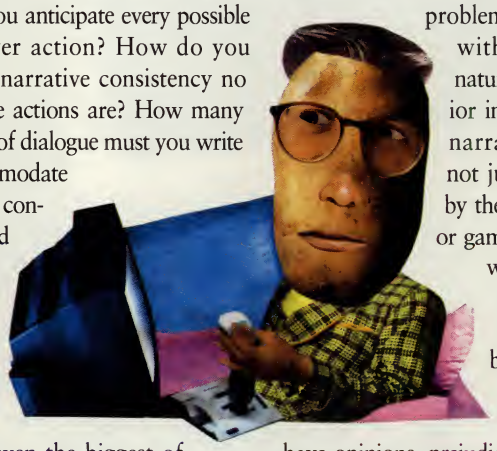


ILLUSTRATION BY MARCIA STIEGER

Obviously, some sorts of limits have to be imposed at the creative and design stages. My question is whether those parameters leave enough room for serious storytelling and serious interaction. Or whether the easiest solution is to create adventures that mimic television programs while offering just enough player-solvable puzzles to pass off the whole package as interactive entertainment. If so, so be it. But we should hold out for more. If this new medium is going to be art, then we should demand artists.

I think that serious narrative is possible within interactive boundaries, but achieving it is going to require another level of thought and ambition at the writing and design stages. And I think the best place to start is with the characters. That's where all great drama—or comedy, or even action-adventure—emanates from, and this is no less true for interactive storytelling than any other medium.

We need to move toward interactive worlds that are populated by more fully realized characters, with whom we as players can interact on higher levels than simple problem-solving. Characters with real pasts, whose natures affect their behavior in psychologically and narratively sound ways, not just reactions dictated by the nature of game play or game plot. An interactive world populated with characters so convincing that they breathe, weep, worry, fight, and laugh. Characters who have opinions, prejudices, experiences, fears, and faiths. Women and men whose natures, however slowly revealed in the course of a game, remain consistent and believable.

In short, give us people to interact with—not just to watch.

Of course television itself doesn't have many characters this carefully and seriously created. But, hey, don't we want more from interactive entertainment than we generally get from the tube?

Keith Ferrell is editor of Omni, *editorial director of* Compute, *and science and technology editor of* Penthouse, *each of which covers the interactive revolution in its own way.*

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Game On

Rusel DeMaria

Making an Interactive Movie

I'm on the set with Tia Carrere—you know, the "schwing" babe from the *Wayne's World* movies. She's going to be in a flick with Arnold sometime soon, but that's not what she's filming now. No, at this moment Tia's starring in the latest Mechadeus cine-game, The Daedalus Encounter (see Sharp Edge, July 1994, page 12).

Mechadeus are the folks behind Critical Path, which displayed some fine production values and nice acting work but was marred by limited and ordinary game play. The Daedalus Encounter is several times bigger and quite a bit more ambitious.

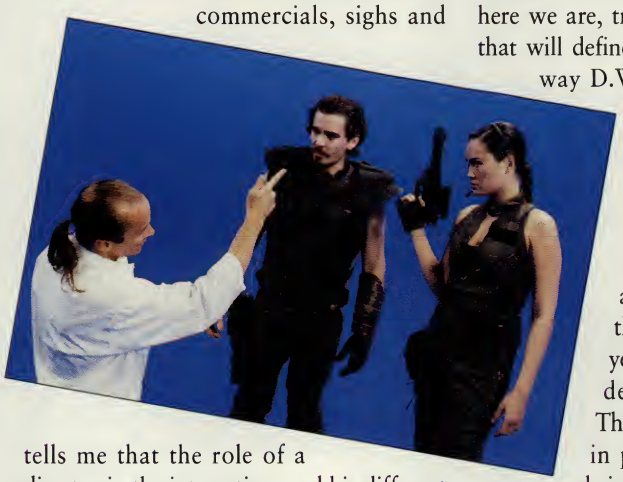
Tia and her costar Christian Bocher are strutting their stuff in front of big blue and green screens while directors and technicians check their location on monitors, lining them up with the three-dimensional digital artwork. That's all the set there is: no props, no visible backgrounds, no help at all. The blank space will eventually contain electronic renderings that form the world the characters will inhabit when, months later, we play the game. I imagine it's a little like doing scenes with animated characters. You know, like Gene Kelly dancing with Jerry the mouse of "Tom and Jerry" fame in *Anchors Aweigh*, or Bob Hoskins kissing Jessica Rabbit.

So I ask Tia what it's like acting in an interactive movie. She answers, "It scares me." Why? Because you have to do the same scene many times, she says, with different outcomes, trying to keep the same character motivation for each repetition. And because you don't know what it's really going to look like or play like when the game is finished.

I ask her what she thinks of the story, and she says, "Ask me after I've seen it. I have no idea at the moment. That's the problem."

But Bocher, whose credits include a recurring role on "Another World" and guest appearances on a variety of network TV shows, seems to like it. He's enthusiastic even though he has bruises all over his body from yesterday's filming, when he shot all the "dying" sequences. "It's much more complex doing an interactive script," Bocher says, "and, because it's filmed all out of order, it's hard to keep it interesting." On the other hand, he says the key to his participation is that it's a good script. "That's what makes it worth it."

If things are tough for the actors in an interactive movie, they can be even worse for directors. I ask Scott Ewers, the director on the set that day, what it's like to direct a nonlinear story such as The Daedalus Encounter. Ewers, an award-winning veteran of advertising and TV commercials, sighs and tells me that the role of a director in the interactive world is different from what he's used to.



PHOTOGRAPH BY JAY BLAKESBURG

"Film is a director's medium," Ewers explains. "Theater is the actor's medium, and in the interactive world it's the designer.... In film, the director is the focal point of the production. He is where the concept and the vision come together. In the interactive production, the designer of the product is really in charge of the vision."

That means "the role of the director is a little like a glorified stage manager," Ewers says. "It's all about not knowing what your location is. Not knowing because a lot of it hasn't been designed yet." So the director must get the most out of the actors with only part of the vision.

And he has to do it while fighting boredom on the set. In The Daedalus Encounter, for example, players need to collect six globes, but not in any particular order. "So for each scene that involves getting each globe," Ewers says, "we had to film it six different ways. This creates a certain amount of tedium.... It requires a great deal of concentration."

There are other complications inherent in the interactive director's role. Ewers talks about the need to create a grammar for interactive filmmaking. "We're not exactly doing *The Birth of a Nation*," he says, "but here we are, trying to create the elements that will define a new medium, much the way D.W. Griffith did back in the infancy of cinema. I think of it less as a movie than as a season's worth of episodic TV shows. You've got 16 episodes, but the viewer can watch them in any order, even skip between them. And along with that, you've got to create character development and drama. There are some real challenges in preserving the game while heightening the drama."

Despite all the unknowns, Ewers is excited about the new medium. And he's confident his actors will be, too. "I'm sure Tia and Christian will be blown away by the end result," he says. "They have no idea yet, but they will."

Rusel DeMaria is the author of more than 25 computer and video-game strategy books.

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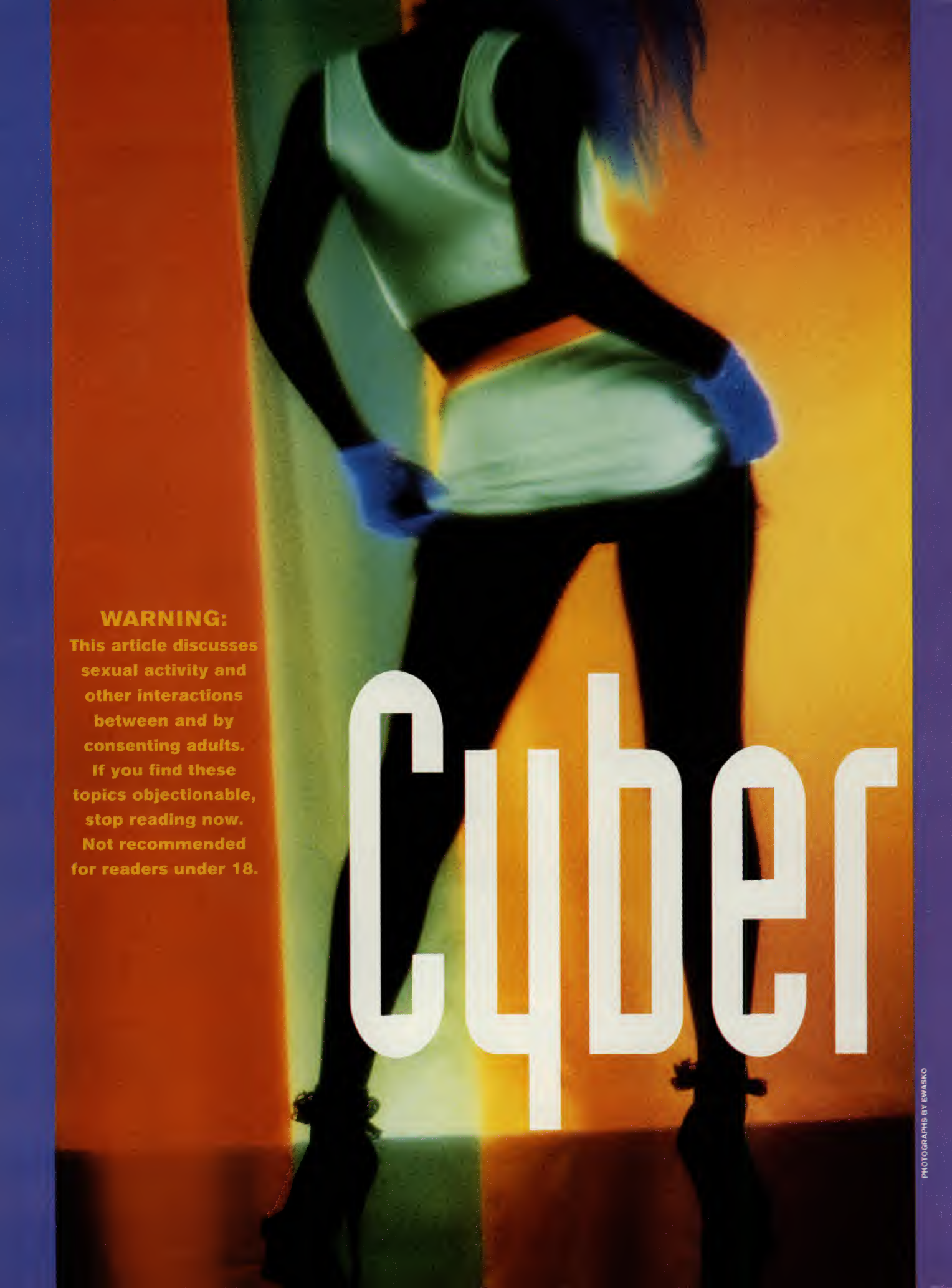


WARNING:
This article discusses sexual activity and other interactions between and by consenting adults. If you find these topics objectionable, stop reading now. Not recommended for readers under 18.

Cyber

PHOTOGRAPHS BY EWASKO

By Nancie S. Martin

Is the interactive entertainment market mature enough for adults-only software?

The woman of your dreams appears in front of you. "Do you want to touch me?" she asks. "Yes," you say. You point to the part of her body you want to caress, and she moans as masculine hands meet feminine skin...

This tender moment from the forthcoming CD-ROM Virtual Vixens represents the

mainstream future of electronic interactivity. But will X-rated software reach the mainstream, or like other adult-oriented products, will it end up in the seedy part of town, hidden behind black curtains in dingy stores?

It's easy to forget that erotic material helped jumpstart the video age. "When people first bought video camcorders and VCRs, it was the same thing," says Chuck Zane of Zane Interactive, which co-produced Virtual Vixens with Pixis Interactive. "They'd show little Susie's birthday party—then dad would go back to his den and look at X-rated stuff."

Even in the computer era, sex-related software titles were some of the earliest success stories. Back in 1981, Softporn, an all-text, floppy-based program from On-Line Systems, was popular on Apple computers. On-Line Systems eventually became Sierra On-Line, and some of Softporn's puzzles were incorporated into the first Leisure Suit Larry, one of Sierra's all-time bestsellers.

Says Larry's creator, Al Lowe, "Softporn sold 25,000 copies at a time when there were only 100,000 Apple IIs in the world. Allowing for widespread pirating," Lowe says, "we figured just about everyone had one."

"It wasn't even interesting," Lowe adds. Despite the fact that in order to win Softporn, players had to engage in such adventures as sadomasochism, prostitution, and even marriage, "It was very boring. But it had sexual content."

Fast-forward to 1992, when the first full-length QuickTime movie came out. No, it wasn't the Beatles' *A Hard Day's Night*, it was Andrew Blake's *House of Dreams*, "an epic tale of sexual fantasies" that had previously been a sales and rental champion on video tape.

When people first bought camcorders and VCRs then dad would go back to his

Interactive? Hardly. A small, grainy, jerky QuickTime 1.0 window played back on a plain Macintosh desktop, and the user could fast-forward or rewind using the QuickTime controller.

Even at a suggested retail price of $79.95, this disc version sold amazingly well—well enough that so-called digital movies remain the largest segment of the adult CD-ROM market. Although some newer releases, such as Playboy's Complete Massage for CD-i and Vivid Interactive's The Legend of the Kama Sutra, provide better video quality and such features as chapterization and photo stills, these products don't offer much more than their video counterparts. So why does anyone bother with them?

Hot Wire is the world's first digital skin magine.

"People spend a lot of time at their computers," answers Lawrence Miller, a founder of Interotica and of New Machine Publishing, which releases digital movies such as *House of Dreams* and *New Wave Hookers,* as well as more interactive CD-ROMs. "They're doing miserable work at their computers that they can't stand, they're being irradiated for a paltry sum of money, and basically, popping in an erotic CD-ROM makes it more of a personal experience."

The Players

And who are these people? For now, the universe of adult CD-ROM consumers is obvious: people who like adult material and have access to CD-ROM drives. This translates, theoretically anyway, into big numbers. Researchers at InfoTech say there are now 11.4 million CD-ROM drives installed worldwide. And the *1993 Adult Entertainment Guide* estimates that Americans rented at least 445 million adult videotapes in 1992.

Centerfolds on Disc is as interactive as most picture discs get.

Chances are, there's a lot of overlap. And chances are the overlappers are male, especially since men are the purchasers of most computers, peripherals, and other electronics. Men are also involved in the rental of 89 percent of adult videos, says the *1993 Adult Entertainment Guide.*

"Adult males are the drivers of software," says John Williams, product brand manager at Sierra On-Line. "We're not a complicated bunch, and it's not hard to get our attention.... If you discount Disney, Playboy leads with videotape sales. Why would CD-ROMs be any different?"

These guys' interests may be building a market for more than software. Of the personal computers sold last year, twice as many were equipped with CD-ROM drives as were two years before, according to the Software Publishers Association. The big question is this: How responsible is the availability of adult software for this increase in hardware sales?

Very, say industry experts. They point to a statistic recently published in *The New York*

Virtual Reality Sex: Is It For Real?

Many people's notion of virtual sex comes from such films as *Lawnmower Man* and publications like *Future Sex:* a clanking array of data suits, head-mounted displays, and stylized electronic sex toys.

"Entertainment has progressed from analog to digital, and the final aspect is virtual reality, total immersion in an electronic world," says Mark Media of Pixis Interactive. But will virtual-reality sex be a reality anytime soon?

Maybe not, at least according to today's purveyors of cyberotica. "We've heard from companies producing teledildonic devices, but we're not really sure we want to get into that," says Lawrence Miller of New Machine. "The mind plays more of a role than [physical attachments]. You can have an orgasm in your sleep."

"Probably ten years from now, virtual reality will be technically feasible and cost-effective for the average person," predicts James Ehrlich of ICFX. "But we're not focusing on teledildonics but on what people are doing in the brain."

Galen Brandt, a musician and performer who has done extensive work with biotriggered and virtual-reality equipment, agrees. "In image, as in love," she says, "it is not quality of resolution, it is quality of response that matters."

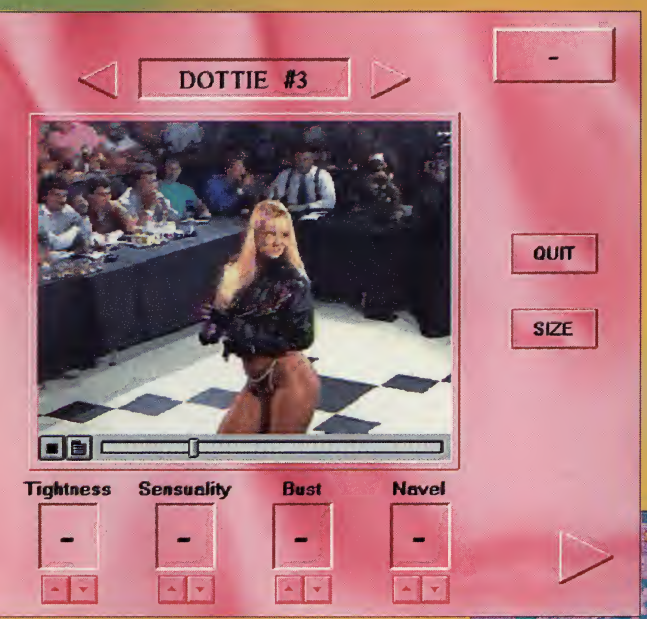
And for some, it wouldn't make any difference. "Larry wouldn't score in virtual reality either," says Al Lowe of his infamous leisure-suited creation. "All sex, to Larry, is virtual."

—Nancie S. Martin

they'd show little Susie's birthday party—den and look at X-rated stuff.

Times: In 1978 and 1979, fewer than 1 percent of American homes had VCRs—and more than 75 percent of the videocassettes sold were pornographic. Today, 27 percent of U.S. households own a personal computer, and many people think that we feel that CD-ROMs will be driven by sex," Johnson says. "We know from electronic bulletin boards that a good percentage of our readers own computers. And so far, the response we've gotten to our CD-ROM has been very good."Those bulletin boards represent an enormous segment of the high-tech sex software market.

CD-ROM titles such as Biker Babes, Heavenly Hunks, and Public Fantasies consist of nothing more than collections of digitized photos, usually 640-by-480 pixels in resolution, which are sometimes accompanied by cheesy music.

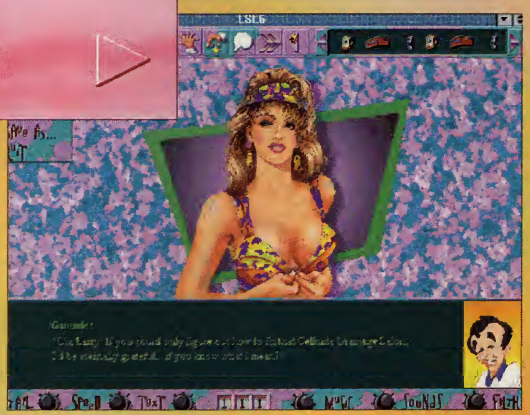


The Perfect 10 Bikini Contest rates only about a 4.

adult titles are partly responsible.

Sierra's Williams thinks adult products will drive the ownership of CD-ROM drives in a similar fashion. Besides inflicting Leisure Suit Larry upon an unsuspecting world (the series has sold 1.5 million legitimate copies to date, and spawned perhaps twice as many illegitimate versions), Williams is also developing new products for *Playboy*. "If I'm showing people what a CD-ROM can do, and I try to show them the Kennedy assassination, their eyes glaze over," he says. "But if I show them an adult title, they perk right up."

Bob Johnson agrees. Johnson is editorial director of Crescent Publishing, which publishes the skin magazines *High Society*, *Cheri*, and *Playgirl*. Crescent recently released High Society's *Hot Wire Vol. 1*, which Johnson calls the world's first interactive adult magazine on CD-ROM. "As the video industry was driven by sex videos,



Leisure Suit Larry knows that it can be hard to score on screen, too.

A few titles, such as Centerfolds on Disc, use a simple interface to give you access to the cheesecake. The pictures range from PG-rated shots of babes in bikinis to what *The Adult Reference Library* advertises as "Tiny Tits...Milky Mams...Lez-O-Rama...Really Weird! and Lots More!"

Most of these photos are not copyrighted, so you can upload them via modem to electronic bulletin boards.

The Playboy Datebook is a high-tech version of the classic pin-up calendar.

Let's Get Interactive

While digital movies and collections of still-pictures have dominated so far, more interactive discs are now the fastest-growing segment of the adult CD-ROM market. Products of widely varying quality are vying for press attention, and for what little shelf space is available. The level of interactivity in these titles is also variable. Jasmine Multimedia's R-rated Perfect 10 Bikini Contest proclaims, "You make the choice! You make the rules! You judge the hottest competition on CD-ROM!" Your only real interaction with this disc, however, is in choosing your favorite from a parade of video clips of "the world's most beautiful exotic dancers," most of whom are shod, inexplicably, in spike-heeled white boots.

Other R-rated interactive titles now on the market include The Playboy Electronic Datebook and the sixth in the Leisure Suit Larry series, Shape Up or Slip Out! Also available are Pixis Interactive's Scissors N Stones and New Machine's Digital Dancing, which share the improbable premise that playing "rock,

In Scissors N Stones, you play Rock, Paper, Scissors for clothes.

If you'd prefer a woman you can talk to but who She can't discuss Proust, but she

paper, scissors" with a stripper is the best way to get her to take off her clothes.

If you'd prefer a woman you can talk to who, unlike most real women, has no opinions of her own, try conversing with an artificially intelligent one. AIdea's Girlfriend Teri talks to you onscreen, has a vocabulary of more than 3,000 words and, while she can't discuss Proust, she can "learn" to say, "It's *so big!*" on demand.

More technically accomplished is *Penthouse's* Virtual Photo Shoot. As "photographer," you choose from three Penthouse Pets (a blonde, a brunette, and a redhead—now *that's* choice). Then the intrepid lensperson views a series of poses for each model, using the mouse to click on a camera icon, which makes a shutter sound much more realistic than the Pets' breasts look. A photo session, including such entertaining features as real-time zoom shots and multiple angles of the pouts, arches, and wriggles, is compiled and then critiqued by *Penthouse* publisher Bob Guccione. You can also print it, though at glacial rates. According to James Ehrlich, president of the disk's developers ICFX, all the video was shot specifically for CD-ROM—and more photo-shoot discs featuring different Pets will soon be available.

Digital Dancing is an incongruous mix of stripping and silly games.

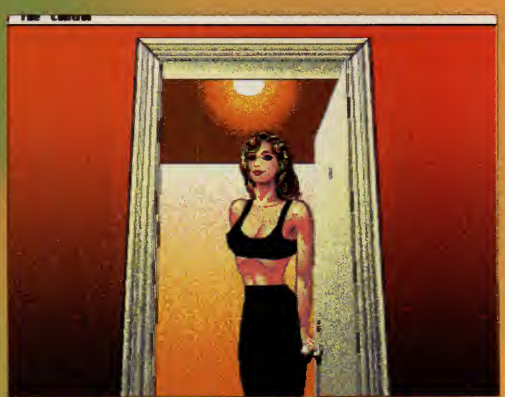
High-quality video and a slick interface help Penthouse Interactive stand out among adult titles.

Girlfriend Teri knows 3,000 words, but "No" isn't one of them.

Reactor's Virtual Valerie: The Director's Cut also invites you to interact with its star (she's animated, sort of, and rendered almost lifelike)— but instead of using a camera you get a choice of sex toys. Use them on her for long enough with just the right strokes, and she rewards you with a barrage of coos and groans, and a trip into the red zone on the Sexual Response Meter. The drawback? Creator Mike Saenz says that people are getting carpal tunnel syndrome from trying to please Valerie. Fail to please her, and she'll kick you out. Virtual Valerie 2, which should be out by the time you read this, takes that humiliation even further, with forays into bondage and S&M.

If you'd rather have some interaction happening *on* your screen as well as *with* it, New Machine's The Dream Machine offers a number of QuickTime video options in a variety of rooms off a rendered hallway. Choose an operating-room doorway and you'll see a nurse-and-patient scenario. Pick the door with a stylized man-and-two-women symbol on it, and that's just what you will find inside. After you leave each room, an onscreen hostess quizzes you. Depending on the responses, both she and the disc programming adapt, so that you're guided in different directions and spoken to less aggressively or more so. New Machine statisticians estimate that there are 1.3 million possible variations in the experience.

Feel the need to be more in charge? Titles



Check out Virtual Valerie's apartment—it's more interesting than Valerie.

has no opinions of her own, meet Girlfriend Teri. can learn to talk dirty on demand.

like Massive Melons and Touch Me...Feel Me let you pick which video you want to watch by clicking the mouse on the models' various body parts.

But that's only the first step. Come Play With Me lets aspiring Lotharios "prowl the soft belly of the night to pick up and seduce the woman of your dreams." It puts you in "a bar full of willing bimbos" (which presumes a bimbo is the woman of your dreams), and promises what for some is the ultimate fantasy: "You control the women!"

Virtual Vixens, also set in an explorable, rendered environment, adds a first-person point of view and a choice of what you'll see. Mark Media of Pixis Interactive calls it a TFUI (Touch and Feel User Interface). Choose the hand icon and click on the buttocks of a rotating, representational female icon, and there your hands are (assuming you're a white male), fondling the rear of a comely porn star in the QuickTime window. Choose other body parts, whether yours or hers, and watch what happens—then imagine how difficult many of those scenes must have been to shoot from the proper perspective.

Big Business

Consumer response to adult CD-ROMs is so enthusiastic that some industry watchers estimate Virtual Valerie has sold more than 100,000 copies. James Ehrlich of ICFX says that, as of March 1994, *Penthouse* aficionados had snapped-up 30,000 copies of the Virtual Photo Shoot disc. And Mark Media of Pixis expects to sell 75,000 to 100,000 copies of Virtual Vixens. In an industry where the Software Publishers Association gives awards to products with sales that top 50,000, those are big numbers.

"No one can really predict the size of any market," says David James, president of Vivid, which has been in the adult video and film business for a decade, but only recently added interactive CD-ROMs to its product line. "Four of the interactive titles we released last August are past the 10,000 mark in sales, which everyone says is great for CD-ROM."

Most of these sales, incidentally, have come without the benefit of many retail outlets. Although the *Playboy* and *Penthouse* titles have made a few inroads to such stores as Tower Records and Virgin Megastores, most products have been sold via direct marketing or mail order. It's a trend that concerns all of the producers and publishers of R- and X-rated CD-ROMs.

"There's a very large marketplace for retail and a very small one for direct mail, especially in the adult market," says Sierra's Williams. "I can understand the retailers' point of view. If I were standing in Babbage's shoes and someone brought me a triple-X CD-ROM with a naked girl on the cover, I wouldn't put it next to Super Mario. But if someone tries to stop adult material, it might hurt the [CD-ROM] business overall."

Advertising adult-oriented products can also be problematic. Many magazines widely read by computer users—including this one, *New Media*, and *MacUser*—will take ads for adult CD-ROMs only under certain limited conditions, such as no nudity and back-of-the-book placement. Other magazines won't accept adult advertising at all. And while *Playboy*, *Penthouse*, and *High Society* can

The Dream Machine does its best to pander to your preferences.

It's Different for Girls: What Women Want

Wondering about erotic CD-ROM titles for women? Don't bother—there aren't any. Despite the fact that more women than men work with computers, and that women have a say in more than a third of all adult videotape rentals, there are currently no erotic CD-ROMs developed with women in mind. "We're trying to introduce women to the market," says Lawrence Miller of New Machine, "but as a man, I'm limited. I know what turns men on, generally, because I'm a man. It's for women to create something erotic for women."

One woman known for doing just that is Candida Royalle, whose Femme Distribution makes and distributes erotic videos directed and written by women that reflect women's sensual interests. She is currently putting together a CD-ROM catalog of Femme products to test the waters. But she's cautious about the potential for interactive erotica. "Women don't usually watch this stuff alone," Royalle says, "and I don't know if couples would sit together in front of the computer."

A version of *Playgirl* on disc is also in the works, and *Playboy*'s best-selling Complete Massage Love Sex (Pocket Books, 1994), says that what women really want is information about sex and couples video is available on CD-i. But noted sexologist Gina Ogden, Ph.D., author of *Women Who* power. "In many CD-ROM products the women have no real feelings and the men are forced or allowed to divorce themselves from their real feelings. But what if you got to explore Virtual Valerie's feelings about what is happening to her?" she asks. "These kinds of [CD-ROM] products could really deliver a lot of that to women."

—*Nancie S. Martin*

Come Play With Me lets you prowl the soft belly in a bar full of willing bimbos. It helps if the

Touch Me...Feel Me lets viewers watch videos or use the mouse to fondle the models.

Seymore Butts challenges you to do just that.

CD-ROM magazine, while Interotica has created an online service.

Sierra is creating a new adventure game for *Playboy* set in Hugh Hefner's Holmby Hills mansion. The title is slated to come out by the end of this year. John Williams claims that, "when it hits..., it'll redefine the marketplace."

advertise in their own media properties, including their online services, they will not usually sell space to competing products.

Despite these obstacles, people will continue to find new and better ways to buy and sell interactive erotica. Vivid, says David James, is producing discs for the CD-i and 3DO platforms in English, Japanese, and five other languages.

ICFX's Ehrlich—who disdains platforms with fewer than one million units in the marketplace—says he is working with Sega of America. (Sega denies having any discussions with *Penthouse*.) *Penthouse* is also working with "a major telephone company, a major cable company, and some ad agencies" to create interactive television programming and a

In the Realm of the Censors

Should censorship—or, to use a politer term, regulation—play a part in what you can and can't see on CD-ROM?

Like it or not, it already does. By keeping R- and X-rated products off their shelves, retailers create economic restraints on producers. And the de facto constraints go beyond retail: Sony's CD-pressing plant in Terre Haute, Indiana, refused to press the first *Penthouse* Virtual Photo Shoot CD, and other printers and manufacturers have opted to turn away adult products.

In an attempt to quell public concerns about violence, the software industry is formulating a self-rating system that will conveniently include sex. It should be in place by Christmas. Under the new system, most erotic titles can be expected to be rated "MA-17," meaning that they are recommended only for mature people over 17. If you're older than 17, it's up to you to decide if you're mature enough.

3DO, however, already has its own rating system in place, with "AO" serving as its Adults-Only rating. Ratings marks may also have specific descriptors indicating that a title contains strong language, violence, nudity, sexual situations, or drug use. "If the industrywide system is as effective as ours," says Hal Josephson, 3DO's director of industry relations, "we'll adopt it." And the company acknowledges that the AO rating will be a "badge of honor" for some software developers.

"I can accept self-regulation," shrugs New Machine's Lawrence Miller. "But when are people going to rise *en masse* and say, 'Stop condescending to me!'"

—Nancie S. Martin

Mainstream Dreams

"A lot of triple-X-rated [material] is too much too soon for the marketplace. Instead, you'll see [electronic erotica] sneak into adventure games, just as it came in through movies in the '60s," Williams predicts. "It's much more likely that an Activision or Sierra or Virgin will get adult content into stores sooner than Interotica or those guys."

Pixis Interactive agrees. "We lust after technology more than we lust after lust," says Mark Media, explaining that his company expects Virtual Vixens to be its last hardcore product. In the future, Pixis plans to stick with R-rated titles like Scissors N Stones. "We're looking at overall market share," Media says, "and we think mainstream adult software can be very viable."

That approach may be the answer to the

of the night to pick up the woman of your dreams woman of your dreams is a willing bimbo.

question posed at the beginning of this story. Yes, unquestionably, adult software will succeed. But will the hardcore stuff ever hit the mainstream? Probably not.

"While people in public decry with outrage the impact of pornography on the world and on humanity," says New Machine's Lawrence Miller, "the truth is that it's part of who we are as human beings."

And for most human beings, sexuality—and the pornography that may inspire it—requires privacy. Prehistoric carvings were hidden in caves, and naughty postcards are hardly ever mailed. So if you find yourself alone in the dark with only your mouse and Virtual Valerie, there's a reason for it.

PlanIt Paradise mixes swimsuit models with a calendar program.

My place or yours: Come Play With Me lets you pick up women in bars.

Nancie S. Martin is president of Jouissance Productions, a San Francisco multimedia company that produces '60s music CD-ROMs for Rhino Records and Compton's New Media. She was associate producer of the Xplora 1: Peter Gabriel's Secret World CD-ROM, and was the former editor-in-chief of Playgirl Magazine.

Freedom of Speech

If you think violent games like Mortal Kombat are controversial, you ain't seen nothing yet. Hey, we know that not everyone is turned on by sexy games and multimedia titles. Got a problem with the multimedia titles and games included in this story? Then use the contact information listed here to complain. Or use the information to order. We won't tell.

- **Biker Babes** (New Machine; 800-865-9000; CD for DOS/Windows/ Mac, $39.95)
- **Centerfolds On Disc** (REG Publishing; 818-993-5629; CD for Windows, $49.99)
- **Come Play With Me** (SW Enterprises; 800-500-1323; CD for Windows, $33)
- **The Interactive Adventures of Seymore Butts** (New Machine; 800-865-9000; CD for Windows, $69.95)
- **Digital Dancing** (New Machine; 800-865-9000; CD for DOS/ Windows/Mac, $69.95)
- **The Dream Machine** (New Machine; 800-865-9000; CD for DOS/Windows/Mac, $69.95)
- **Girlfriend Teri** (Aldea Labs; 214-235-4999; DOS, $79.95)
- **Heavenly Hunks** (BodyCello; 800-922-3556; CD for Windows/ Mac, $49.95)
- **High Society's Hot Wire Vol. 1** (Crescent Publishing; 800-458-9640; CD for Windows, $59.99)
- **House of Dreams** (New Machine; 800-865-9000; CD for DOS/Windows/Mac, $29.95)
- **The Legend of the Kama Sutra** (Vivid Interactive; 800-822-8339; CD for DOS/Windows/Mac, $49.95)
- **Leisure Suit Larry 6: Shape Up or Slip Out!** (Sierra On-Line; 800-757-7707; DOS/Windows/ Mac, $69.95; CD for DOS/ Windows, $79.95)
- **Massive Melons** (Romsoft; 800-859-4441; CD for DOS, $79.95)
- **New Wave Hookers** (New Machine; 800-865-9000; CD for Windows/Mac, $29.95)
- **Penthouse Virtual Photo Shoot** (General Media; 800-466-9435; CD for Windows/Mac, $99.95)
- **Perfect 10 Bikini Contest** (Jasmine Multimedia; 800-798-7535 x8901; CD for Windows, $59.95)
- **PlanIt Paradise** (Media Vision; 800-845-5870; CD for Windows, $59.95)
- **Playboy Electronic Datebook** (Playboy; 800-423-9494; DOS, $59.95)
- **Playboy's Complete Massage** (Playboy; 800-423-9494; CD-i, $24.98)
- **Public Fantasies** (Romsoft; 800-859-4441; CD for DOS, $69.95)
- **Scissors N Stones** (Pixis Interactive; 800-697-4947; CD for Windows/Mac, $69.95)
- **Touch Me...Feel Me** (Romsoft; 800-859-4441; CD for DOS/ Windows, $79.95)
- **Virtual Valerie: The Director's Cut** (BodyCello; 800-922-3556; CD for Mac, $95)
- **Virtual Valerie 2** (BodyCello; 800-922-3556; CD for Windows/ Mac; $95)
- **Virtual Vixens** (Zane Interactive/ Pixis Interactive; 800-697-4947; CD for Windows/Mac, $79.95)

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SEGA CD CHAMPIONS

BY GREGG KEIZER

I don't know about you, but when I want to play, I want to play now. Not a year from now. Not six months from now. Now.

And the *now* for CD-based, set-top game decks is the Sega CD. Although every manufacturer from Sony to Sega itself is promising big things in the future, only the Sega CD delivers today.

A $229 add-on that turns the popular Sega Genesis video game machine into a capable, though not totally techno-sweet, set-top entertainment black box, the Sega CD delivers today because it's...well, it's old. And that doesn't necessarily mean obsolete. In gaming, "old" can also mean mature, which translates into a large number of games. And the game box with the best selection wins.

The Sega CD's maturity and consequent library of titles are its biggest strengths. Technology isn't: Even by today's standards, it's behind the times. Its 16-bit microprocessors and single-speed CD-ROM drive just aren't able to display large numbers of colors or show high-resolution video at anything remotely close to television-quality. Compared to the machines slated to debut during the next year, the Sega CD is a creaky dinosaur. (See sidebar "Future Threats," page 49).

But today—right now—the Sega CD is *the* CD box to buy. And here's why.

E2 PRESENTS THE BEST TITLES FOR TODAY'S TOP-SELLING CD-ROM GAME DECK.

It's Better Than the Current Competition... The only real current competitor to the Sega CD is Panasonic's 3DO Interactive Multiplayer. Thanks to its 32-bit processor and adjunct graphics chips, the 3DO system displays stunning animated images and is able to force-feed the TV with live-action video in higher resolutions, more colors, and much smoother motion than the Sega CD. But a $500 price tag and relatively short playlist keep the 3DO from mounting an effective challenge. That may change, but right now it costs too much and delivers too little.

As for other CD-based game machines now on the shelves—like Philips' CD-i and Atari's Jaguar: they'll be lucky to find enough scraps to survive. Neither has an effective, let alone innovative, library of titles for the grown-up game player. The CD-i is technologically even weaker than the Sega CD, and the Jaguar has little—if any—marketing muscle. You can ignore both machines without risk of missing much.

It'll Last Long Enough... Sega's doing what it can to squeeze a longer life out of the Sega CD. The company released the Genesis CDX, a $399 portable unit that plays audio CDs and handles both Genesis cartridges and Sega CD titles, last April. And now it's talking about the Genesis Super 32X, a $150 add-on designed to transform the Sega CD into a 32-bit machine of sorts, which will be able to run modified Genesis cartridges and Sega CD titles. Because the system will be able to move a lot more data around quickly, these games will run at higher resolutions and have more colors than current titles. Scheduled for release this winter, the Super 32X may keep you on the Sega CD/Genesis system, at least through the initial charge of next-wave competitors.

Other possible life-extenders for the Sega CD are also tied to the Genesis, the base system the Sega CD is attached to. The Sega Channel will deliver Genesis games over cable TV, the Edge-16 modem will let you play games over the phone, and a wide range of peripheral controllers, including plastic light-guns from makers such as Sega and American Laser Games, will be available. That's something that the 3DO doesn't have.

The bottom line? You can count on getting grins from the Sega CD, at least through the end of 1995.

It's Got Titles... Games, of course, decide whether an entertainment machine flourishes or fades away. The Sega CD's well-stocked library should top 150 titles by Christmas, and is its best defense. In comparison, the 3DO machine, for instance, had only about 35 games in its collection as of the beginning of this summer.

If there's a catch, it's that it's no surprise that many of these titles are CD versions of popular cartridge games. In fact, that's one of the reasons why the list is so long. As for the remainder of Sega CD's library, most either *look* like video games or are aimed at the same teen audience. A few of these entries, however, show some appeal to older game players as well.

Though there aren't any true "adult" titles in its library (the closest may be something like the now-discontinued Night Trap), several more cerebral titles—such as Dracula Unleased, Mansion of the Hidden Souls, and Jurassic Park—take aim at those of us old enough to remember Ronald Reagan.

We've looked at dozens of Sega CD games, then skimmed-off the cream to present 13 titles that exhibit the best grown-up entertainment this machine can provide.

Gold Medalists

Ground Zero Texas

ALIENS AMONG US. Where have I heard that one before?

The plot may be right out the '60s TV series "The Invaders," but the shooting is pure '90s video game. You run four remote- control cameras and particle-beam guns in a dusty Texas town where human-hungry aliens sometimes look like solid citizens.

Ground Zero Texas

An all-video, first-person perspective game, Ground Zero's production values are top-notch, with plenty of small-town ambiance and actors that chew-up the scenery.

Unfortunately, this fast-reaction shoot-'em-up can get a little repetitious. It also requires an optional light gun for maximum fun. You'll wear out your thumb handling the control pad. (Sony Imagesoft; 310-449-2320; 59.95)

Mansion of the Hidden Souls

LOOKING EERILY SIMILAR to the PC hit The 7th Guest, Mansion of the Hidden Souls is a low-intensity adventure that sends you through a spooky 3-D-rendered mansion.

You won't care about the plot—it's lame—but you will fall for the way this Sega CD game looks. In a word, it's magnificent.

Mansion of the Hidden Souls

You've got to move fast as you look for clues and objects and listen to the spoken hints, because you're on a tight deadline. You need to rescue your sister before she mutates into a butterfly (*a butterfly*? Told you the plot was lame) and joins the rest of the lost souls.

Because of the weak story line, the game's replay value is almost nil, but unless you're a hard-core fantasy role-playing nut, you'll get your money's worth the first time you play it through. (Vic Tokai; 310-326-8880; price not available)

Prize Fighter

You can swear off expensive pay-per-view boxing matches when you have Sega's two-disc Prize Fighter game. This all-video title puts you right in the ring—literally, since the perspective has you staring out of the eyes of an up-and-coming boxer—against four opponents in a series of three-round bouts.

Somehow, the black-and-white video's grainy look only adds to the effect, as if it

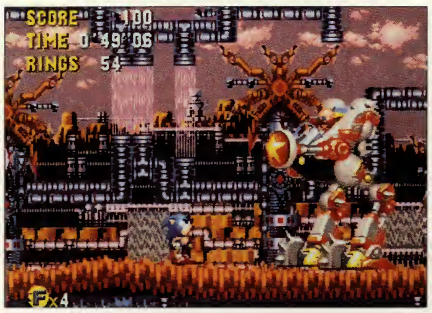
Prize Fighter

were a '50s match-up on an old Zenith TV. As movie-then-game, Prize Fighter is a hard hitter; as a game-then-movie, it's more of a wimp, since you can play in Training Mode to uncover pugilistic strategy. Still, it's great stuff. (Sega of America; 800-872-7342; $59.99)

Sonic CD

Death and taxes are two sure things, and Sonic making it to every Sega machine—current and future—is just as certain. Big shock, then, that the blue hedgehog shows up on a Sega CD platter.

The best of the many cartridge-to-CD conversions in the Sega CD's library, Sonic CD lets you race the blue critter through 60 levels and seven bonus rounds, collecting rings, trouncing enemies, and bashing the big, bad bosses that block the way to the next round.



Sonic CD

New songs—35 all-told—sound terrific, thanks to the surround-style Q Sound.

Sure, Sonic is perceived as a kids' game, but you'll enjoy the frenetic action, too. Fans of Sonic's numerous cartridge adventures will want this to complete their collections; for anyone else, it's a good way to amortize the Sega CD by letting the kids in on the fun. (Sega of America; 800-872-7342; $49.99)

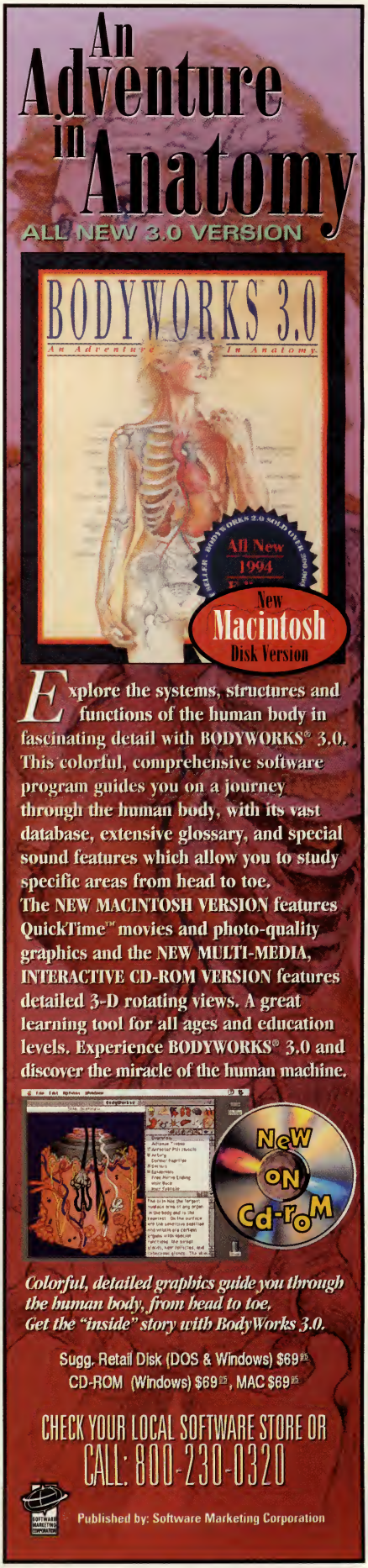
Silver Medalists

Dracula Unleashed

Brain games are rare on TV-top game decks. Dracula Unleashed, though not unknown to adventure players (it's also available on PC CD-ROM and CD-i), is one of the few Sega CD titles that doesn't depend on a twitchy thumb.

Vampires, dark and stormy nights, and creepy vistas are the trademark of any Dracula-based story, and this one's no different. Live-action video vignettes sport credible acting, and interrupt the more mundane tasks of gathering clues and traveling across London in search of the undead. Dracula Unleashed's production values are excellent (just a tad

Dracula Unleashed



Circle 162 on Reader Service Card

lower than bronze medalist Double Switch), but for the thinking player, it's a better buy. (Viacom New Media; 708-520-4440; $49.99)

Jurassic Park

A YEAR AFTER ITS release, Spielberg's movie *Jurassic Park* keeps rakin' in the dough. The name's been franchised to a slew of developers, with a wide range of resulting games, but the Sega CD version is the most entertaining of the lot.

Essentially a first-person perspective adventure game, Jurassic Park on the Sega CD combines a solid framework of investigation with enough action to pump the adrenaline. The dinosaurs are running wild (a storm's knocked out the powered fences), and you're gathering their eggs before splitting from the island. You'll need stun-guns (no dinocide allowed) to clear paths, and an inquiring mind to uncover clues and other objects.

Jurassic Park

Live-action video is minimal, but the audio is stunning. And it's impossible not to learn a thing or two about these giant creatures while you play. (Sega of America; 800-872-7342; $59.99)

NHL Hockey '94

SPORTS GAMES ARE poorly represented on the Sega CD, but don't blame NHL Hockey '94. This cartridge conversion is an exciting and excellent simulation, with hundreds of video clips from the league's archives, commentators' voice-overs, and the kind of swirling organ music you clap along to at the real rinks.

NHL '94 Hockey

The game action, shown in a three-quarter view as if you were seated halfway up the stands, is all animated, as in the Genesis version. But you'll be treated to video clips of real teams and players during introduction and intermission scenes, such as when you score a goal. These extras are window dressing, sure, but they make this sports sim an easy hat trick. (EA Sports; 800-245-4525; $59.95)

Tomcat Alley

IF YOU WANT TO FLY A flight-simulator, stick to the PC. If you want to fly inside a film, lock in Tomcat Alley instead.

You sit in the back-seat of an F-14, playing electronic warrior as you navigate and fire missiles at video bogies. You'll need quick reflexes; you only have seconds to acquire the target and launch.

It's the film footage—grainy like almost everything on the Sega CD—that makes Tomcat top-notch. And the sound effects are super. Live-action actors, movie-like sets, and best of all, the digitized aerial combat scenes put Tomcat on the list of Sega CD's better-get, first-person, all-video games. (Sega of America; 800-872-7342; $59.99)

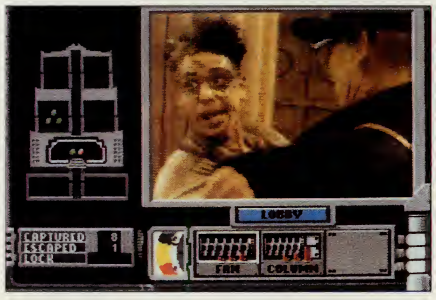
Tomcat Alley

Bronze Medalists

Double Switch

THE SEGA CD CAN'T play CD movies like the CD-i and 3DO can, so Double Switch is the closest you'll get to Hollywood. A combination mystery movie and action-reaction game, Double Switch's full-motion video (it's another all-vid title) is the clearest and sharpest you'll see on the Sega CD.

As you defend an apartment building from intruders (by setting motorized traps, then tripping them when the goons step on them), you'll see way too much of teen star Corey Haim of *The Lost Boys* fame, and not enough of Blondie's Deborah Harry—check out that Cleopatra-style black wig! (Sega of America; 800-872-7342; $59.99)



Double Switch

Lethal Enforcers

POLITICALLY CORRECT it's not. But Lethal Enforcers' shoot-till-you're-a-brute game play on the Sega CD is convincingly like what you get with an arcade machine. It provides plenty of artificial tension, maybe a bit of real sweat on your palms,

and even has a moral of sorts: He (or she) who lives by the gun, dies by the gun. Trite but true.

As a Chicago cop, you blast it out with bank robbers and airplane hijackers. Better

Lethal Enforcers

buy an optional light-gun—don't even try to play this game with just the control pad. On-screen characters are digitized actors, but they don't really move the way that they do in Mad Dog McCree, and the backgrounds lack detail. As long as you nail that creep holding the hostage, who cares? (Konami; 708-215-5100; $69.99)

Mad Dog McCree

HEY, IT ALL GOES BACK to John Wayne and James Arness. We see a dusty street, a guy in a ten-gallon hat, and we want to slap leather.

Mad Dog McCree, born in the arcades and weaned on the PC and 3DO, lands on the Sega CD with game play, if not graph-

Mad Dog McCree

ics, intact. You walk through video scenes, blasting at the mean hombres who draw at you. It's a waste to play without an optional light-gun, and the video is alternately choppy, or as lumpy as a ballpark's Diamond Vision screen seen too close, but the action keeps you pumped. (American Laser Games; 800-863-4263; $59.95)

continued on page 49

SEGA CD SOMETIME SOON

The Sega CD library is flush with titles now, and you can expect to see at least one, probably two, more waves of new releases in the next year or so. Check out these four when they hit the shelves this year.

Battlecorps

You sit inside an armored giant and duke it out with scads of targets. In the prerelease version we looked at, the graphics were a bit on the rough side—like a lot of 16-bit action games—but the sound effects were super. (Time Warner; 800-593-6334; $54.99)

Sid & Al's Incredible Toons

A puzzle game with an attitude, Sid & Al's uses much the same mechanics as The Incredible Machine for PC and 3DO. Here, though, Dynamix pushes hard at the cartoon angle, as you build weird contraptions from a toolbox to keep a cat from catching a mouse. (Dynamix; 800-326-6654; $49.95)

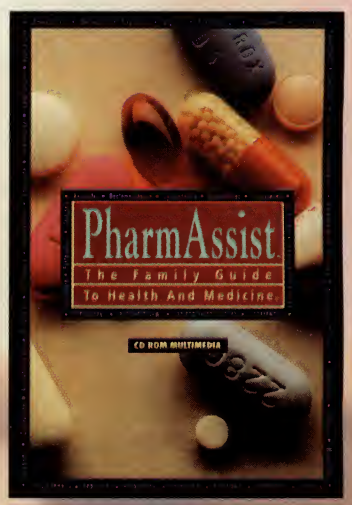
Rise of the Robots

Another multi-platform game (it'll show up in both PC floppy and CD-ROM formats), this martial arts punch-kick game pits mechanical fighters, not blood-soaked humans. It's not close in look or feel to something like Sega's beautifully rendered 3-D arcade hit Virtua Fighter, but for the Sega CD, it should be a charmer. (JVC; 415-364-7734; $49.99)

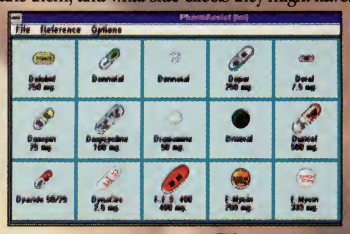
Who Shot Johnny Rock?

From the folks who made Mad Dog McCree a "Draw!" in the arcades, this follow-up shooter relies on video, too. The scenery's changed—it's moved into the 20th century—but the action is pretty much the same. (American Laser Games; 800-863-0234; $59.95) *—Gregg Keizer*

Ask Your PharmAssist



There are thousands of different medicines on the market today—and a million different questions about how they work, when to take them, and what side effects they might have.



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Mortal Kombat

Mortal Kombat on the Sega CD is so close to being a clone of the Genesis cartridge game that its digital DNA would show a 99.999% match.

If you've played the Genesis version—or better yet, the now-ancient rendition in the arcades—you've already played this Sega CD

Mortal Kombat

copy. Except for the intro—basically a commercial—and some slight improvement in the visuals, the most major change is that blood flows right from the start. No secret codes to enter to see the red stuff here. (Acclaim; 516-624-9300; $49.95)

Stellar-Fire

Stellar-Fire, like several other Sega CD games, has an ancestor on the PC and a sibling on the 3DO. This version, though, is the smoothest-playing of the bunch. For a CD-based shooter, it's terrific.

The opening is impressively cinematic, the

Stellar Fire

soundtrack oppressively monotonous, and the 3-D polygon-rendered graphics move so fast you'll have to eye-lock the TV to keep up with the action. You're shooting your way across five moons, then it's on to the nasty Draxxon's home world where you blow geometric shapes to smithereens, as you search for power-ups to repair your ship. At the end of each round, you face a boss guardian that's hard, hard, hard to kill. Fast and furious. (Dynamix; 800-757-7707; $34.95)

Future Threats

It's not the here-and-now that worries Sega CD owners. It's the future.

Sega's own Saturn, the code name for its next-generation machine, will feature either a pair of 32-bit processors or a 32 bit/64-bit processor combo, play CDs and cartridges, cost $500 or so, and be available next year.

Project Reality, the handle for Nintendo's upcoming 64-bit box, is also slated for a 1995 debut (but likely late in the year). With a mass-market price of $250 and software that comes on cartridges instead of CDs, Project Reality looks to be a super-duper Super Nintendo for teenage boys, the traditional video game herd.

Sony wants in to this lucrative part of the consumer electronics market, too, and reportedly plans to ship a 32-bit box called the PSX in '95.

No one wants to buy something that will be old news tomorrow, but three factors make it too early to give up on the Sega CD. First, it's entirely possible that the next wave of boxes will ship later—maybe much later—than their makers now claim. Second, even if these new machines do appear as promised, it will take months, maybe as long as a year, to create a respectable list of titles. And third, a complete Genesis/Sega CD system costs around $300, considerably less than any hot system of today or tomorrow, Nintendo's Project Reality excepted. (And I'd take that $250 sticker with a lot of salt.)

Of course when the machines touted for tomorrow actually arrive, the Sega CD could be dead meat. Nothing lasts forever. But today, it's alive and kicking. No box-on-a-blueprint can say that. —*Gregg Keizer*

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ILLUSTRATIONS BY JOHN CRAIG

Explore virtual worlds on your PC without spending big bucks.

DO-IT-YOURSELF VR

What does virtual reality mean to you? Some people associate it with slick techno-helmets and wired gloves, while others think of showbiz-borne images from *Terminator II, The Lawnmower Man,* "Wild Palms", or even Las Vegas' Luxor Hotel. It's all these things, and a lot more.

Virtual-reality (VR) technology lets you explore a three-dimensional place generated by computer and experienced with special input and output devices. A true VR system is immersive—it makes you feel as if you're actually inside that virtual world. And it's also interactive—the system responds to your movements and actions, allowing you to alter your viewpoint and interact with the world's virtual objects.

Virtual reality takes place in real time. That means the computer processes and displays the simulation as you experience it, rather than simply running a prerecorded program off of the hard drive, floppy drive, or game cartridge.

BY LINDA JACOBSON

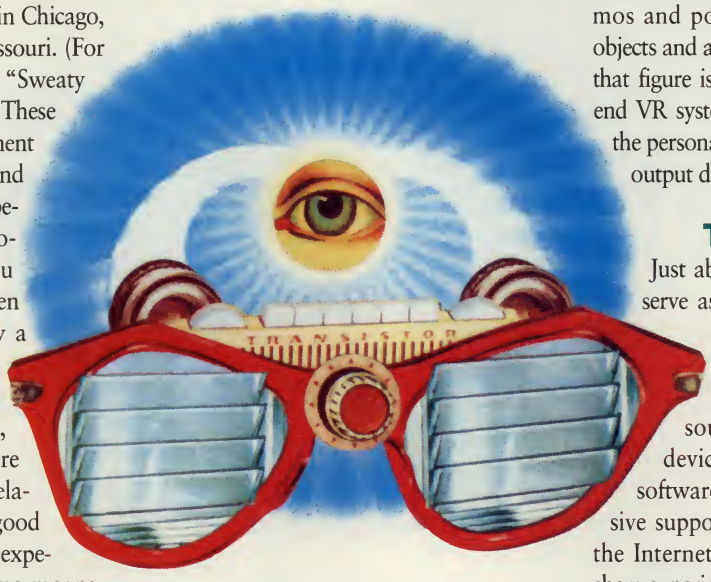
You can explore virtual worlds at one of the growing number of VR game centers around the country, such as CyberMind in San Francisco, BattleTech Center in Chicago, or Exhilarama in Crestwood, Missouri. (For more on location-based VR, see "Sweaty Palms," January, 1994, page 42.) These arcades offer high-quality equipment and plenty of social interaction, and they satisfy a hankering for competition (and a yen for virtual violence). The trade-off is that you have to travel to the arcade, then spend as much as $10 to play a game that lasts for only minutes.

The alternative is home VR. Compared to VR arcade games, home VR simulations move more slowly, and the graphics look relatively crude, but the quality is good enough to let you have fun. And experiencing VR on your own terms means you're not limited to participating in someone else's creativity, nor are you stuck just playing games.

Home VR lets you call the shots. It's like the difference between buying art or creating your own. With VR tools you can sculpt a three-dimensional, audio/visual environment. And after you assemble a VR system and create your first virtual world, you become a technological pioneer.

No matter what your interests, virtual reality can take you where you want to go. Outer space, ancient Greece, a futuristic metropolis—what sort of place fires your imagination? Build and explore it using home VR.

Home VR is also a great tool for planning the future—whether you want to arrange the furniture in your new apartment or practice simulation design to prepare for a career in the blossoming field of virtual reality.



Until recently, if you wanted to assemble your own VR system you had to shell out $15,000 for the cool accessories—wired helmets and gloves—then tack on another five-figure amount for the "virtual world-building" software and high-end hardware (computer, graphics and sound processors, and position-trackers). A complete system would top $25,000.

But today you can assemble a "desktop" VR system starting at around $3,500. You need a high-end PC outfitted with special graphics processors, stereoscopic shutter glasses to view the world, and 3-D input gizmos and position trackers to control the objects and action in the virtual world. If even that figure is too high, you can hack a low-end VR system for under $2,000—including the personal computer and exotic input and output devices.

THE VR ENGINE

Just about any personal computer can serve as a "virtual-reality engine." The PC tends to be the engine of choice because it can use the greatest variety of graphics and sound boards, input and output devices, and low-cost and free VR software. PC owners also enjoy extensive support from online services and on the Internet, where home VR enthusiasts share experiences, tips, and virtual worlds.

Don't give up if you don't own a PC, though. There are software and VR devices that turn Macs and Amigas into virtual-reality engines, too. Both these systems benefit from having great graphics and sound built in.

Whatever computer you use, it needs the horsepower (and memory) to handle real-time 3-D graphics and interaction—at the least, a 386/33 PC, or a 68030 Macintosh running at 25MHz, or a 25MHz A1200 Amiga equipped with a math coprocessor. The more powerful the computer, the better the VR experience. Graphics will look finer and simulations will move faster.

Home-Brew VR Kit

VR ENGINE: 486/66 PC with 16MB of RAM, Super VGA graphics, 14.4-bps modem and communications software

OUTPUT DEVICE TO HEAR VIRTUAL WORLDS: Advanced Gravis UltraSound 3-D board connected to stereo headphones

OUTPUT DEVICE TO SEE VIRTUAL WORLDS: StereoGraphics CrystalEyes PC stereoscopic glasses

INPUT DEVICE TO INTERACT WITH VIRTUAL WORLD: Logitech CyberMan

SOFTWARE TO BUILD AND EXPLORE VIRTUAL WORLDS: Sense8 WorldToolKit for Windows, VREAM Development System, Virtus WalkThrough

TOTAL PRICE: $4,800

PHOTOGRAPH BY WEINBERG AND CLARK

SEEING (AND HEARING) IS BELIEVING

To see what's going on in your virtual world, you have several choices. The cheapest output device is your computer monitor. Conventional monitors don't deliver a sense of immersion and three-dimensional stereoscopy, but these elements aren't always necessary. Nonstereoscopic virtual worlds can look terrific—and besides, not all virtual-reality software programs support stereo viewing.

If you do want the optimal sound-and-vision experience in a virtual world, you'll want a head-mounted display (HMD). This is a computer display device housed in a helmet that contains two tiny video monitors, one in front of each eye. Audio headphones and position-tracking sensors match the movements of the displayed images to the movements of your head.

Forte Technologies' VFX1 HMD

There are several commercial HMD products, and VR hobbyists have been inspired to build their own HMDs, mounting camcorder monitors or cheap miniature TVs inside football or motorcycle helmets. Building your own HMD isn't easy because it must include optics, position trackers, and a signal converter to translate computer display signals into video display signals. But it could be the least-expensive option if you've got the time and the skills.

On the commercial side, VictorMaxx Technologies introduced the Stuntmaster HMD for Sega Genesis and Nintendo Super NES game systems last year. The $200 Stuntmaster wasn't meant as a PC display, but clever home VR fans quickly hacked it into one. To help users connect the HMD to their PCs, VictorMaxx published technical data about the product on the Internet. Unfortunately, the HMD is heavy and uncomfortable, has a low-resolution monoscopic display, and its position tracker (a plastic doohickey that clips to your shirt) doesn't perform well.

A Virtual Glossary

HEAD-MOUNTED DISPLAY (HMD): A helmet-based computer display device containing two tiny video monitors (one in front of each eye) and often combined with audio headphones and position trackers that match the movements of the images to the movements of your head.

POSITION TRACKER: A system that tracks the movements of parts of the body and sends information about position and orientation to the computer for processing. Position trackers are included in head-mounted displays and input devices, such as data gloves and 6DOF gadgets, to track movement in the virtual world.

Simsalabim's Cyberscope

6DOF (SIX DEGREES OF FREEDOM): Refers to an input device's capability to track movement of spatial position (*x*, *y*, and *z* axes) and orientation (pitch, roll, and yaw).

STEREOSCOPY: Technique for viewing objects so they appear to exist in three dimensions, such as in 3-D comic books, 3-D movies, and Viewmaster toys.

STEREOSCOPIC SHUTTER GLASSES: Electronically-controlled glasses for viewing computer-generated stereoscopic images. Liquid crystal "shutters" are mounted in the lenses of plastic goggles. The computer synchronizes the shutters to correspond with alternating left-eye and right-eye versions of a 3-D picture. Images appear to float in front of the monitor.

VIRTUAL REALITY: This trendy phrase is open to interpretation. VR industry professionals prefer such phrases as "interactive, digital, immersive simulations" or "telepresence technologies." Whatever the name, the key is that VR lets you enter and explore a three-dimensional virtual world generated by computer, and experienced with special input and output devices. The virtual world responds to your movements and actions. Key traits are immersion (a sense of presence in the virtual world) and interactivity (the ability to alter the view and manipulate objects). Virtual reality takes place in real time: The computer processes and outputs the simulation as you experience it.

VIRTUAL WORLD: A VR application or animated simulation. Virtual world-building software lets you create VR applications. To build a virtual world, you create or import 3-D objects; give them physical properties such as gravity, elasticity, and weight; and program them to respond to the user.

—Linda Jacobson

To satisfy demands for a higher-quality HMD, VictorMaxx developed a headset specifically for Mac and PC use. The $700 CyberMaxx, available this month, boasts higher resolution, tracking sensors, and a stereo display.

For those who can spend more, Forte Technologies will introduce a $1,000 HMD this fall. The VFX1 helmet, like the CyberMaxx, contains a stereoscopic display, stereophonic headphones, and tracking sensors. But the VFX1 looks slicker than the CyberMaxx, and it sports a flip-up visor so you don't have to remove the helmet when you need to see the keyboard.

Both the VFX1 and CyberMaxx work with any computer that uses a standard graphics card. The resulting imagery isn't as clear as on a regular computer monitor because images lose detail when they're transferred from the computer to the helmet's tiny screens.

Less confining than HMDs are stereoscopic shutter glasses. These electronically-controlled glasses are made up of liquid crystal "shutters" mounted in the lenses of a pair of plastic goggles. Shutter glasses—which deliver images closer to monitor resolution than do HMDs—capitalize on the way our brains fuse the individual images seen by both eyes: The computer displays two images of each scene; a left-eye image and a right-eye image. When the left-eye image appears, the right shutter in the glasses closes. When the right-eye image appears, the left shutter closes. This happens so rapidly that you don't notice it and simply see the two images as a single 3-D scene.

The best shutter glasses, wireless CrystalEyes PC by StereoGraphics, start at $985 per system. Lower-quality glasses from companies like 3-DTV, Haitex, and MegageM range from $150 to $250. But these are often called "flicker glasses" because when you wear them, the images appear to flicker. The least-expensive, simplest way to view stereo images involves a $199 device called the Cyberscope, made by Simsalabim Systems. Instead of wearing glasses or a helmet, you mount the hood-like viewer to the top of your computer display using velcro. When you look through its slots, you see crisp, eye-popping graphics.

Another key part of experiencing the virtual world is *hearing* it. Several low-cost PC sound cards can be optimized for use with home VR systems. They create sound that appears to come from different directions around you, not directly from the speakers. Some of these include the $199 Advanced Gravis UltraSound card and the $150 Creative Labs Sound Blaster. These cards will provide 3-D sound only if the VR software you are using supports it.

VR's Very Real Hazards

If you use a head-mounted display to view your virtual world, you might be worried about placing video monitors so close to your eyes. Don't be. These VR helmets are based on LCD technology, which doesn't emit enough electromagnetism to cause harm. Of more concern is the potential for "simulator sickness" (headaches, vertigo, nausea) that some people experience after wearing HMDs. The helmets tend to disrupt the eyes' ability to refocus normally after viewing a virtual world, an occurrence common with any pursuit that changes the eyes' natural focal length, such as using binoculars or camera viewfinders. All good reasons to limit time inside the HMD and wait before driving a car after wearing one.

— Linda Jacobson

CONTROLLING YOUR WORLD

True VR is characterized by the ability to navigate freely through the virtual world and interact with whatever you encounter—to pick up and move objects, open and walk through doors, scale walls, or crawl beneath rocks. It also means controlling your position and viewpoint inside the virtual world.

You can control your home VR system with a keyboard, mouse, trackball or joystick. These ordinary input devices control your movement and viewpoint on the *x* axis (side to side) and the *y* axis (up and down), and in some VR software, the *z* axis (front to back). More unusual 3-D input devices also control movement *around* these axes, called orientation.

This movement consists of pitch (the movement you make when nodding), roll (the movement you make when cocking your head toward either shoulder), and yaw (the movement you make shaking your head "no"). Using an input device that moves in three or more of these six degrees of freedom, or 6DOF (x, y, z, pitch, roll, yaw), you can navigate and view a virtual 3-D environment almost as you would in reality, and move any virtual 3-D object like a real object, by twisting and turning it in any direction.

So-called 3-D and 6DOF devices for home VR systems include Logitech's $129 CyberMan mouse device, which was developed specifically for PC-based games and entertainment software and is ideal for virtual walk-throughs. Multipoint Technology sells the $350 Z-Mouse, which offers more control than the CyberMan and works with Macs as well as PCs.

Logitech also makes higher-end input devices for PCs that are sold through third-party VR developers such as StereoGraphics. The $999 Magellan has nine programmable push-buttons, and a puck-like main controller that provides greater control and freedom than the CyberMan. Logitech's top-of-the-line input device is the 3-D Mouse and Head Tracker, the first versatile, low-cost 6DOF control system. StereoGraphics bundles the head tracker with its shutter glasses in a product called CrystalEyes VR for $1,995. The 3-D Mouse is available from CrystalEyes for an additional $995.

The newest 6DOF offering for PCs is Forte Technologies' $100 CyberBat, a small, wand-like input device that doubles as a mouse or joystick and works with the company's VFX1 head-mounted display.

Many people associate VR with the ultimate 6DOF controller, the data glove. That's why many home VR hobbyists use the Mattel Power Glove. The toy company adapted the VPL DataGlove, the original VR input device developed by VPL Research. Designed as a Nintendo controller, Mattel's Power Glove didn't go over well with video gamers, but it held great allure for hackers, who figured out how to rewire the glove and connect it to PCs. They shared that information with others, making it possible to hitch PCs to Power Gloves just as easily as high-end VR developers connect $10,000 workstations to $8,000 data gloves.

Remember, though—the Power Glove is a toy. Using it requires patience because learning to control virtual objects takes time. Yet it's an ideal tool for experimenting because it makes you feel as if your hand is inside the virtual world. You will need software to control the Power Glove, and you'll find plenty of it available on the Internet. Mattel discontinued production of the Power Glove in 1991, after distributing more than one million gloves to toy and electronics stores. Originally sold for around $80, Power Gloves are now available for less than $20 at places that sell Nintendo accessories.

BUILDING YOUR WORLD

With all your VR hardware assembled, it's time to think about software. The proper software will let you create or import 3-D objects, give them physical properties, and program them to trigger visual and audio events in response to particular actions.

With today's VR programs, this is a time-consuming task. The 3-D models that make up most virtual worlds look like plain, flat-shaded, geometric shapes. Some home VR programs import texture maps to make the models look slicker. The next two years, though, will see the introduction of easy-to-use VR software, libraries of intriguing, interactive virtual worlds, and cool software designed specifically for the new generation of VR helmets and controllers. Until then, you can choose from three categories of relatively low-cost software:

Logitech's top-of-the-line 3-D Mouse and Head Tracker.

Programming Toolkits. If you want to master one of these toolkits, you'll most likely need to know how to program computers in C and construct and edit 3-D models. These programming toolkits are versatile, powerful, and support many VR devices. You'll find them in all price ranges—from freeware on the Internet to the professional level $795 Sense8 WorldToolKit for Windows. One of WorldToolKit's most impressive features is that it lets you enter data into a spreadsheet program and watch it appear simultaneously in a graphic form in a virtual world.

VR Basic from Waite Group New Media is one toolkit that doesn't require programming skills. The $70 program uses menus to let you choose programming statements. You can get up to speed on VR Basic's scripting language or choose from pre-built worlds included with the package.

Modeling and Simulation Programs. These mouse-driven, graphical programs are the hallmarks of home VR. Available for the PC are the $495 VREAM Virtual Reality Development System, the $295 VREAM Advanced Runtime System, and the $59 VREAM Standard Runtime System. VREAM software mimics high-end VR software in its ability to build and animate interactive 3-D scenes. Each VREAM package comes with more than 100 preprogrammed sample worlds, such as living rooms and city streets. The Development System supports many popular VR devices, including the Power Glove, Cyberscope, Logitech controllers, and CrystalEyes, while the Standard Runtime System works only with the CyberMan, keyboard, mouse, and joystick.

Mattel's Power Glove can be hacked for PC use.

Sense8's WorldToolKit lets you program virtual worlds.

Virtual Reality Studio by Domark is an easy, fun program that lets you model and view 3-D scenes and interact with animated objects. You use drop-down menus to create models, or choose them from the library. For example, select a cube, place it in an empty world, and stretch it into the shape of a castle wall. Repeat with other shapes until you've created a castle. You

VR Building Blocks

CrystalEyes PC (StereoGraphics; 415-459-4500; PC, $985)

CrystalEyes VR (StereoGraphics; 415-459-4500; PC, $1,995)

CyberBat (Forte Technologies; 716-427-8595; PC, $100)

CyberMan (Logitech; 800-231-7717; PC, $129)

CyberMaxx (VictorMaxx Technologies; 708-267-0007; PC/Mac, $700)

Cyberscope (Simsalabim Systems; 510-528-2021; PC/Mac, $199)

LCD Electro-optic Shutter Glasses (3DTV; 415-479-3516; PC/Mac/Amiga, $150-$350)

Haitex X-Specs 3-D Amiga System (Haitex Resources; 803-852-0750; Amiga, $149)

Sound Blaster (Creative Labs; 408-428-6600; PC, $150)

StereoPro (MegageM; 805-349-1104; Amiga, $225)

UltraSound 3-D (Advanced Gravis; 800-663-8558; PC, $199.95)

VFX1 Helmet (Forte Technologies; 716-427-8595; PC, $1, 000)

Virtual Reality Studio 2.0 (Domark; 800-695-4263; DOS/Amiga, $69.95)

VistaPro (Virtual Reality Laboratories; 805-545-8515; Windows, $129.95; DOS/Mac, $149.95; Amiga, $99.95)

VR Basic (Waite Group New Media; 800-368-9369; DOS, $69.95)

VREAM Advanced Runtime System (VREAM; 312-477-0425; DOS, $295)

VREAM Virtual Reality Development System (VREAM; 312-477-0425; DOS, $495)

VREAM Standard Runtime System (VREAM; 312-477-0425; DOS, $59)

WalkThrough (Virtus; 919-467-9700; Windows/Mac, $195)

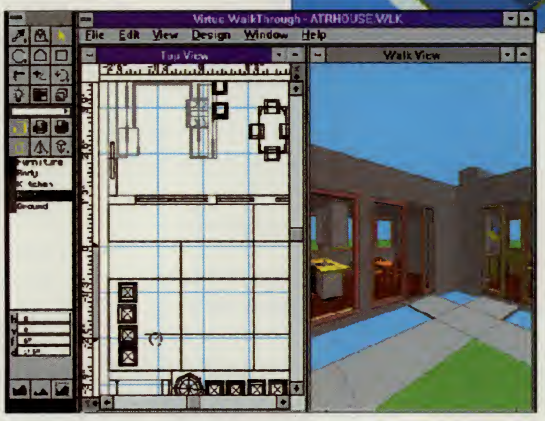
WorldToolKit (Sense8; 415-331-6318; Windows, $795)

Z-Mouse (Multipoint Technology; 508-692-0689; PC/Mac, $350)

can also program each object in your castle, dictating what happens when you touch a particular object or move a certain way. The $70 program for PCs or Amigas doesn't support VR input and display devices, although some hobbyists have figured out how to control it with Power Gloves.

Interact with models you create in Virtual Reality Studio.

Virtual Walkthrough Software. These easy-to-use programs let even beginners create 3-D buildings or landscapes, and use a mouse, joystick, or keyboard to walk through that environment. Unfortunately, walkthrough programs such as Virtual Reality Laboratories' VistaPro and Virtus' WalkThrough don't let you interact with objects inside that environment. You might design awesome doors, for instance, but they won't open when you click on them.



Design your next house with Virtus WalkThrough.

VistaPro, a 3-D landscape-simulation program, lets you create beautifully-rendered, animated flythroughs. The program works with PCs, Macs, and Amigas, and ranges in price from $100 to $150. Virtus WalkThrough is a powerful 3-D modeling and visualization program for Windows PCs and Macs. The $195 program lets you create and experience fast-moving walkthroughs so you can visualize relationships between objects, which makes the program useful for developing buildings and structures. Theater and movie producers use WalkThrough to plan sets and camera shots, but you can use it to create any indoor or outdoor world.

NOW WHAT?

What happens after you buy, borrow, or beg all the parts of your home VR system? Commercial devices come with installation and operating instructions, but you also can call upon the home VR community for information on assembling and running your system. If you have a modem, you can download all kinds of great stuff, including wiring diagrams, assembly plans, troubleshooting tips, and best of all, preprogrammed virtual worlds. Look on the Internet and on commercial online services, such as the CyberForum on CompuServe, or the VR conference on the WELL. Or check out the bimonthly magazine *PCVR*, which is dedicated to home VR.

By the turn of the century, you'll probably be able to buy "VR theaters" from Crazy Ned's Electronic Emporium. Until then, you'll have to get by with your PC and a motley assortment of accessories. It won't always be easy, but it'll be worth it.

Linda Jacobson is the author of Garage Virtual Reality: The Affordable Way to Explore Virtual Worlds *(Sams Publishing, $29.95). This book tells you all you need to know to launch yourself into virtual worlds with a PC, Macintosh, or Amiga, and comes with a DOS disk that includes VR Studio, a Vistapro demo, and Power Glove programs. Jacobson is also the author of* Cyberarts: Exploring Art & Technology *(Miller-Freeman, 1992) and an instructor for San Francisco State University's Multimedia Studies Institute. She cofounded the SF-based Virtual Reality User's Group (VeRGe). Her email address is lindaj@well.sf.ca.us.*

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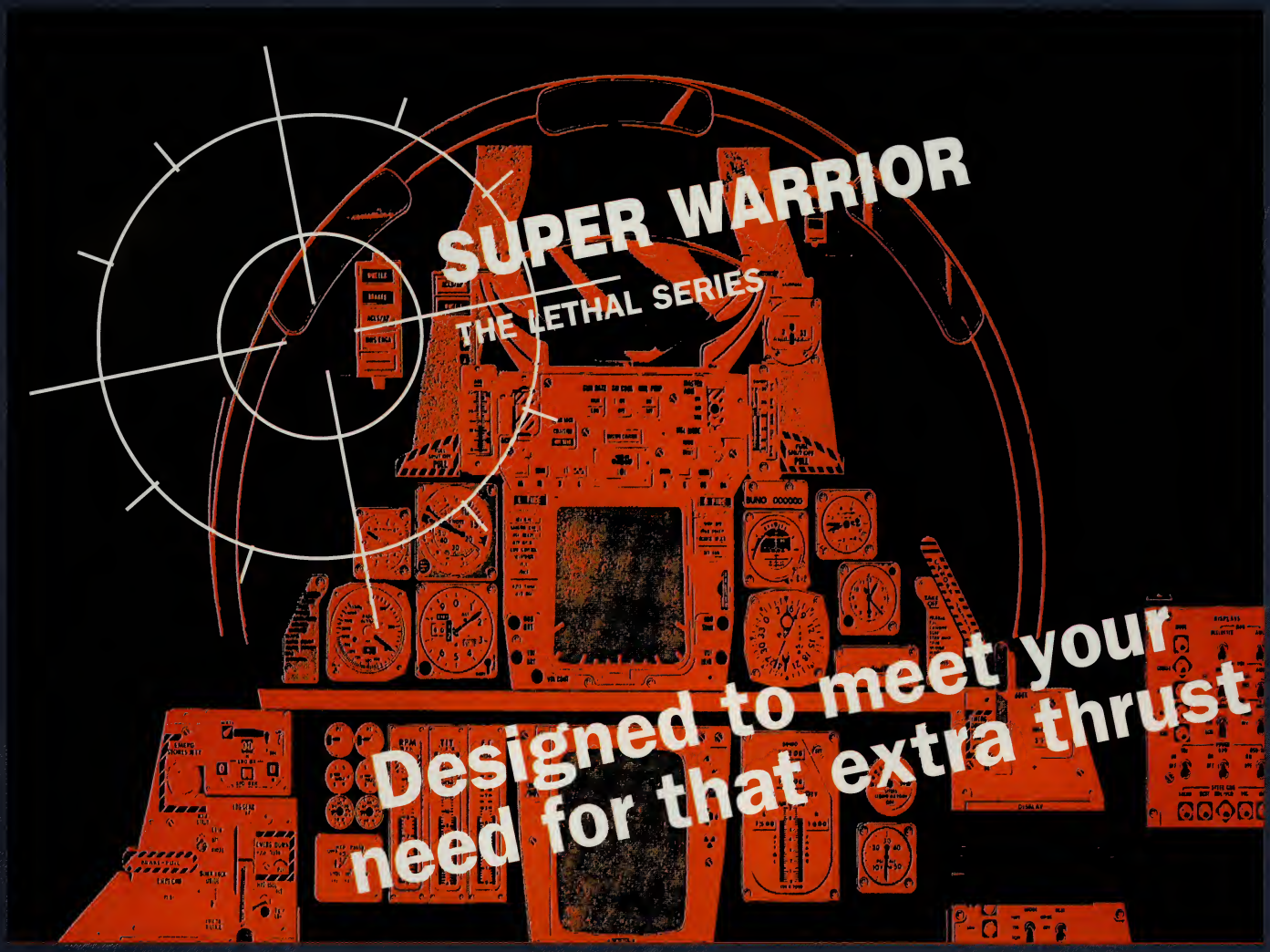

Designed to meet your need for speed and control, the Super Warrior is the first available from a new line of IBM compatible game controllers called the Lethal Series by QuickShot.
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A new memo circulated around the office today. Granger, that metaphor-slinging slave driver who calls himself a regional manager, is trying to "rally the troops." We'll be "tightening our belts," he says, to remain "limber and loose." This will help us "maintain our foothold in the public eye." Ouch. That sounds painful.

I think Granger's talking about saving money by cutting back on our PC equipment. That could be even more painful. If only Granger dropped down to the seventh floor once in a while, he'd see that we really need these hot 486 PCs with all the bells and whistles. They're great for running the high-powered business applications we need to whip our competitors. And they're even better for playing games.

I've got two games running right now. In one window, the CPU is kicking my bishop's butt in chess. In another, it's taking away my virtual money at the blackjack table. Down the hall, Luzinski is turning his PC into a boardwalk arcade again. (I don't mind the constant beeping and buzzing noises; it's

BY DON STEINBERG

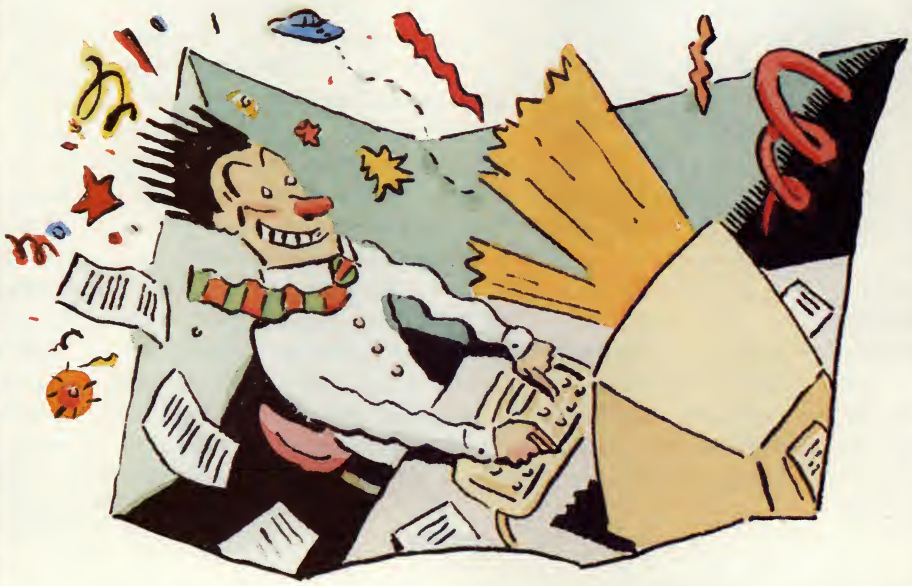
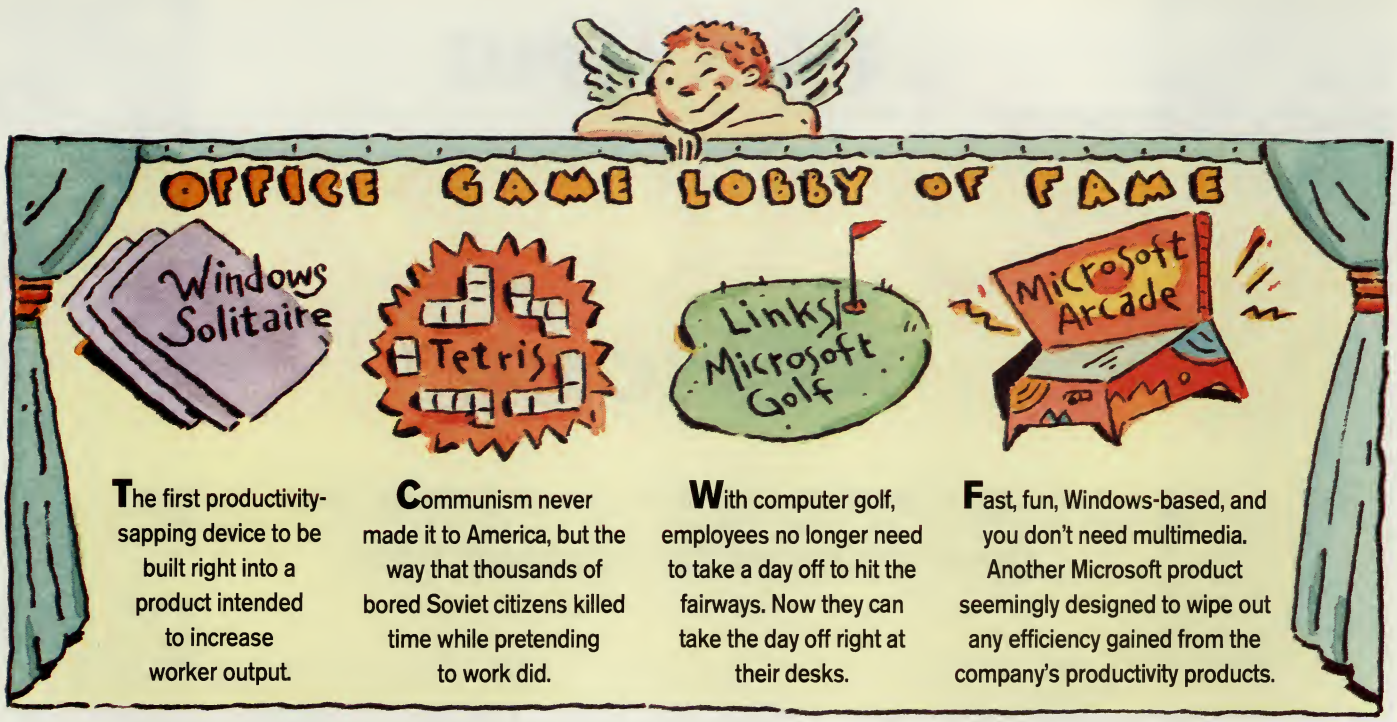


ILLUSTRATION S BY EMARC ROSENTHAL



the smell of the cotton candy and fried dough that makes my stomach do backflips.) And Feldman, poor guy; he's still addicted to Solitaire.

Let's face it, the trials and tribulations of work just can't compete with all these terrific distractions. And what better place to play games than in a cozy office cubicle? The machines they give us here, after all, are much better than the ones we can afford at home.

Granted, office machines don't usually have triple-speed CD-ROM drives, ReelMagic video boards, Turtle Beach MIDI cards, and sizzling speakers. (That's because legitimate corporate multimedia applications are as rare as salary hikes these days.) But it's dangerous to seek multimedia amusement on the job, anyway—the noise might get you nabbed.

At the office, you want a game that'll let you abandon your real work whenever the impulse strikes you, then return you to it where you left off. That's why gamers love Windows. Microsoft's graphical environment made the venerable "boss button" obsolete. (For junior office associates too young to remember, the boss button was a keystroke available in some games that would instantly display a bogus spreadsheet if the big cheese walked in.) With Windows, you can pretend you're working on a *real* corporate spreadsheet.

A good office game should also deliver satisfaction when you play for just 5 minutes at a time. Role-playing games in which you lead a band of medieval wizards through 60 hours of mystery-laden dungeons aren't a good idea. Games that beat you decisively within minutes are much better.

So which games, specifically, are tops for taking advantage of your employer? Here's a memo re: that subject from someone who should know. In this branch office, they call me the regional vice president of goofing off.

Real Cards

Solitaire deserves its plaque in the Office Game Lobby of Fame. Because it ships with Windows (a similar version comes with IBM's OS/2) this game has probably chewed-up more American man-hours than donuts and football pools combined.

If you want to be more sophisticated about wasting valuable salaried time playing digital cards, check out **Bicycle Limited Edition.** It includes a couple dozen Windows varieties of solitaire, plus bridge, cribbage, and poker. The poker game sits you down at a table with a bunch of computer-controlled opponents who, although they're represented

MacFun

Macintosh goof-offs have fewer choices than their DOS and Windows counterparts, but they've got a few advantages as well. Almost all Macs have at least some sound capability built in, so just about everyone can take advantage of multimedia games. And since the Mac is an inherently graphical machine, you can almost always hide a potentially offending game with a quick click or two.

Crystal Caliburn lets Mac users in on the fun.

The only problem is what to play. Top games for the Macintosh office include **Crystal Caliburn** pinball (StarPlay Productions; 800-203-2503, $59.95), **Bridge Deluxe with Omar Sharif** (Interplay; 800-969-4263; $59.95), the abstract **Spin Doctor** (Callisto; 800-544-4511; $59.95), and **Tetris Gold** (Spectrum HoloByte; 800-695-4263; street price approximately $45).

If you have a CD-ROM drive and plenty of down-time, you might want to check out **Myst** (Brøderbund Software; 800-521-6263; $59.95) or **The 7th Guest** (Virgin Interactive Entertainment; 800-874-4607; $99.99). While a bit involved for work, they look so good, your boss might mistake them for a fancy screen saver. Finally, an arcade-style classic like **Crystal Crazy** (Casady & Greene; 800-359-4920; $49.95) would be perfect, but its tell-tale sound effects could jeopardize your career. *—Fredric Paul*

"ABOUT A YEAR AGO, I TOOK ALL THE GAMES OFF MY COMPUTER EXCEPT SOLITAIRE. IT'S PERFECT. IT GIVES ME SOME DIVERSION WHEN I JUST CAN'T FACE WRITING ANOTHER WORD. BUT I'M SO SICK OF IT FROM ALL THESE YEARS OF PLAYING THAT IT DOESN'T SEDUCE ME INTO WASTING AN HOUR OR TWO. ONE OR TWO GAMES AND I'M BACK IN THE SADDLE." —*Jesse Berst, editorial director,* **WINDOWS WATCHER**

only by icons, seem to have personalities of their own as they bluff and bilk you out of your pants. This can be embarrassing if your office has no door. (Swfte; 800-237-9383; Windows, $69.95)

Another way to lose virtual money while foregoing profits for your company is to flush your future down **Casino Expert.** This game lets you pretend you're in a Las Vegas gambling emporium instead of a similar establishment on Wall Street. It includes blackjack, roulette, slot machines, "draw" poker (the kind played on those cheesy machines in taverns), and the inscrutable baccarat. It lets you carry the same bankroll from one gambling event to the next. I prefer the blackjack table, where I was actually up for a while.

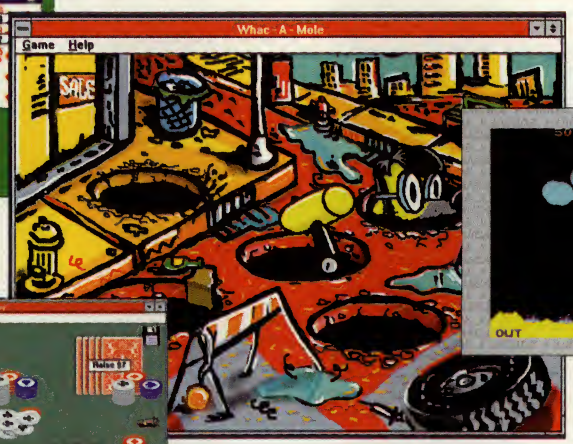
Its coolest feature: even though the program runs under Windows, the geniuses at Expert Software have included a great big boss button. A tap on the space bar automatically minimizes the game to an icon. Bless those programmers. They must have bosses of their own. (Expert Software; 800-759-2562; Windows, $14.95)

Windows Solitaire is the classic office time waster.

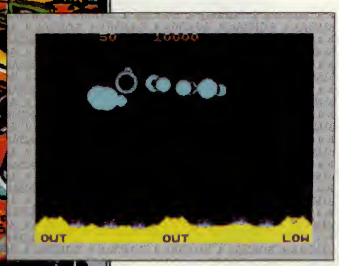
Bicycle Limited Edition offers unlimited fun.

THE OFFICE ARCADE

In case you were wondering, someone has finally brought the old preelectronic arcade smash-hit **Whac-A-Mole** to Windows.



Whac-A-Mole is no more idiotic than an HR memo.



Have some classic fun with Missile Command.

Gamble on the job with Casino Expert.

In the computer version, you use a mouse-controlled hammer to bang the heads of moles as they emerge from holes in the dirt. That is the whole game.

Sure, it's idiotic, but no more so than most memos from the human resources department. And as with the memos, you have to spend only about 45 seconds on it to have had enough. Of course, it's probably not worth shelling out the $40 for Whac-A-Mole, unless you can sneak it onto a data-processing equipment requisition form, along with some equally pointless but accounting-friendly database-management software. (Swfte; 800-237-9383; Windows, $39.95)

There are times, especially following certain staff meetings, when a hammer won't

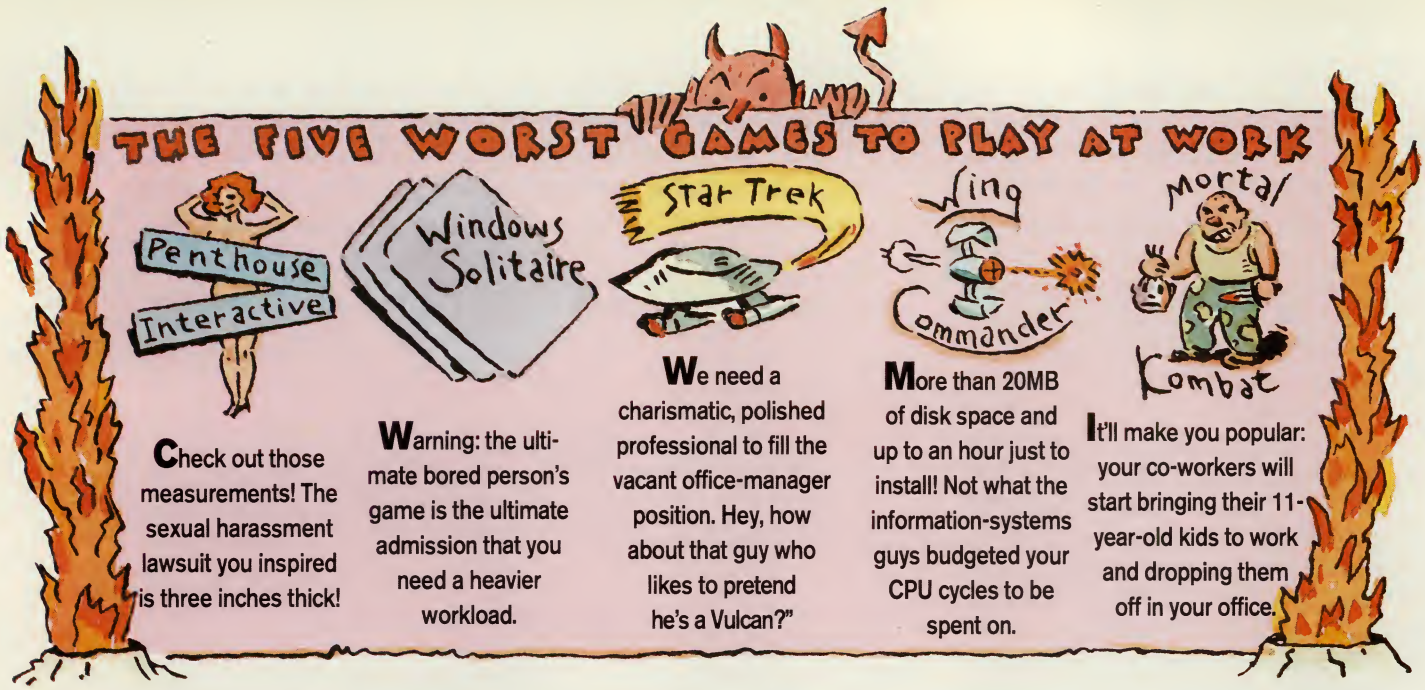
A Four-Step Plan to Safer Time Wasting

1. BE QUIET Repeated sounds of explosions from your computer are not discreet. While most games let you shut off the sound, some older titles that play through the PC speaker don't. Avoid these. If you're on the department's multimedia-equipped machine, see if the speakers have volume-control knobs—or play "unplugged."

2. AVOID CONFIG-FILE INVADERS The LAN administrator who laboriously configured your system to function with corporate applications will not appreciate a game that modifies the CONFIG.SYS file, IRQs, or other system settings of its own initiative. A mistake that crashes the department's network may call unwanted attention to your extracurricular activities.

3. DO SOME ACCOUNTING—FOR TASTE Your place of employment is probably not the best place to reveal your penchant for scoring with chicks or picking-off human targets with an automatic weapon.

4. IF YOU GET CAUGHT... It's bad form to rat on your co-workers with the "everybody's doing it" defense. But it might help to point out that the biggest time waster isn't games, it's the computer itself. Quantrill in human resources, for instance, changes her Windows icons every day. Lutsch in accounting has rearranged his desktop so many times, his mouse needs to be surgically removed from his right hand. Compared with productivity-sapping tools like the ones built into the operating system itself, games are small beer. —*Don Steinberg*



suffice. You need to shoot something. That's why I've been frittering away lots of billable hours playing **Microsoft Arcade.** The package contains five ancient, pre-Nintendo video games resurrected from the Atari archives: Asteroids, Centipede, Missile Command, Tempest, and Battlezone. Each of these games—except for Tempest—will fulfill your urgent need to blast away at everything that moves. Fun then—fun now.

Apparently, Microsoft is fully aware of Arcade's potential for employee abuse. Each game has a secret button you can press when you're playing, as the online documentation puts it, "in less than ideal conditions." Simply hit Escape, and the game you're playing minimizes to an icon—taking a cue, perhaps, from the way you've minimized your contribution to your department's productivity. (Microsoft; 800-426-9400; Windows, $39.95)

Take-a-Break with Crosswords.

The Classics

I don't know why they keep making chess programs smarter. The lowliest chess algorithm written by a 9-year-old Russian kid was destroying me years ago. Humiliation notwithstanding, chess can be an excellent way to stay distracted at the office. Contests against the computer can drag on for days—if you know how to take back dumb moves and save games.

Chessmaster 4000 Turbo is the perfect partner for office chess. It lets you get in, make your move, and get out cleanly without losing your place. Leave it minimized until you're ready to switch from marketing strategies to endgame strategies.

Best of all, nobody ever got fired for playing chess. (You can take it from me.) And if you walk to the coffee machine brooding over your next move, co-workers will merely think you're intense. (Software Toolworks; 800-234-3088; Windows, $59.95)

For a simpler challenge, check out **Take-a-Break! Crosswords, Vols. 1 and 2.** You get 750 crossword puzzles—at three levels—and 20 specialty puzzles. Play against the clock, get six different types of hints, and even print out the puzzles. If you're concerned that the lame music and animations may give your co-workers the impression you're not serious, you can easily turn them off. And if you're really sneaky, you can instantly shrink the game to a spreadsheet icon. That way you can do your precious crosswords without having to spread the newspaper out on your desk. (Dynamix; 800-757-7707; Windows, $34.95)

Chessmaster 4000 will kick your bishop's butt.

Pinballs and Pool Halls

Most work days, it's tough to log quality time at the mall arcade or amusement park, so it's convenient that you can hide one on your hard disk.

Multimedia Pool makes billiards respectable.

Take-a-Break Pinball is specifically designed as an office distraction, as its name not so subtly suggests. Though it's less realistic than Amtex Software's **Eight Ball Deluxe Digital Pinball,** Frogman Software's **Pinball 2000, Pinball Dreams** from 21st Century Entertainment, and the new **Epic Pinball** from Epic Megagames, it does

ONCE UPON A TIME, MY FAVORITE COMPUTER GAME WAS TETRIS. THEN I REALIZED IT WAS TOO HARD TO RESIST THE "PLAY AGAIN?" CHOICE AT THE END OF EACH GAME, SO I ERASED IT FROM MY DISK. NOW I HAVE AN EVEN MORE FAVORITE GAME. IT'S CALLED E-MAIL. IT'S ALL THE MORE ADDICTIVE THAN TETRIS BECAUSE IT CONTAINS A LITTLE SHRED OF USEFULNESS. WHEN I SPEND AN HOUR PROWLING SOME OBSCURE INTERNET BULLETIN BOARD, I CAN TELL MYSELF THAT I'M REALLY DOING WORK."

— James Fallows, Washington editor, **THE ATLANTIC MONTHLY**

come with about a dozen different virtual machines. Better yet, it's smallish and hard to identify from a distance, so if the boss accidentally glimpses it for a moment, the tyrannical pip-squeak might mistake it for a harmless screen saver. (Dynamix; 800-757-7707; Windows, $34.95)

Back before you had a career (if you call shuffling papers eight hours a day a career), you may have preferred the pool hall to the pinball arcade. **Multimedia Pool** lets you relive those days of decadence while still getting paid. Isn't capitalism grand?

Employed pinball wizards will love Take-a-Break Pinball.

Anyway, this Windows game is fun to play, even if it doesn't seem to know all the rules of 9-ball. Its computerized opponent doesn't care if you do something else (like maybe work) while it shoots. It'll keep shooting even while minimized. Too bad it's not smart enough to let you know when it's your turn to shoot again. (Lifestyle Software; 800-289-1157; Windows, $39.95)

GOLF PROS

In general, sports games aren't a good idea for the office. Fast-action athletic competition demands too much attention to fit into your busy schedule. And it's a real drag to send the Bears and the Lions back to their dens just 'cause some suit dumps a load of papers in your in-box.

The exception is golf. **Links 386** and **Microsoft Golf for Windows** are quick and easy to play—one hole at a time—and the green fairways make a relaxing break from the battleship gray and chipped beige color scheme in your cubicle. Even more important, rich yuppie bosses often like golf, so even if you get caught, you'll probably just have to let them play for a while. Although Links is more advanced, it's a resource hog. Microsoft's Windows version is generally a better bet for office play. (Links 386: Access Software; 800-800-4880; DOS, $59.95. Microsoft Golf: Microsoft; 800-426-9400; Windows, $64.95)

FISH NOR FOWL

If Windows Solitaire is the work-wasting champ, **Tetris** also holds a place of honor in the Lobby of Fame. You may think you're only going to play one quick game before you get back to work, but somehow, the next thing you know it's 45 minutes later and the little blocks are still falling.

Microsoft Golf is the best way to hit the links without leaving your office.

You can play Tetris in lots of ways, but the best choice for office indulgence is Microsoft's series of Windows Entertainment Packs. The company recently released **The Best of Microsoft Entertainment Pack,** a compilation of the best games from the first four editions. This collection offers a bounty of Windows-optimized time wasters, including Tetris from Enter-

Network Mayhem

I check my ammo as I slip around the corner and down the hall. Licking my lips, I taste the hot sweat of combat. Out of the corner of my eye, I notice movement in the shadows. My blood begins to boil as the shadow slinks closer. Finally, I recognize my enemy: an accountant.

"Eat expense reports!" I scream, as I pump out round after round of hot lead and plasma. He goes down with a sticky thud.

Victory is mine, at least for today. But I'm sure he'll be back. They always come back. After all, tomorrow is another lunch break.

If your boss thinks Solitaire or Tetris are a waste of company resources and employee time, she ain't seen nothin' yet. Welcome to the world of network games.

Battle your co-workers in SpectreVR.

Games you can play over a network have been around for years, particularly on Unix-based computer systems. But spectacular new network-capable games such as **Doom** and **Spectre VR** for the PC and Mac have let rank-and-file workers—not just engineers—waste time together. (Doom: Id Software; 800-434-2637; DOS, $40. Spectre VR: Velocity; 800-856-2489; DOS/Mac, $59.99)

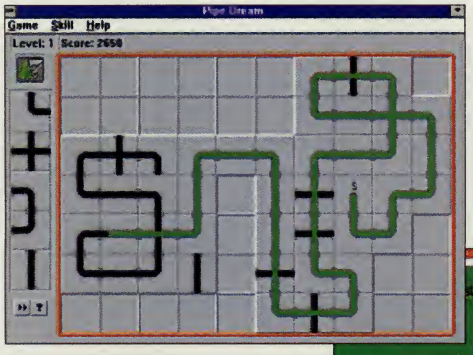
If that's not enough, a slew of new games—including **Magic Carpet** and **Battledrome**—are also expected to allow multiplayer action over your local area network. (Magic Carpet: Electronic Arts; 800-245-4525; DOS, not yet priced. Battledrome: Dynamix; 800-757-7707; DOS, $49.95)

Since few people have local area networks at home, these games are clearly intended for office use. But be warned. Network games are resource hogs. That can spell delays for spoilsports who want to use the network to do their jobs. And when a network game crashes, it can take everything else with it. That's definitely not fun. *—Christopher Lindquist*

SORRY, BUT I'VE NEVER PLAYED A COMPUTER GAME." —*William F. Buckley, editor-at-large,* **THE NATIONAL REVIEW**

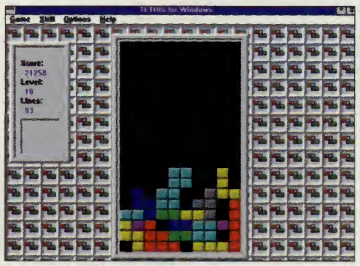
tainment Pack 1 and PipeDream, which might be considered work by plumbers, from Pack 2.

Of course, the original Entertainment Packs also include some winners that didn't make it into the best-of compilation. My personal favorite productivity killer is **WordZap,** from Pack 3. WordZap gives you eight random letters that you use to create words more quickly than your computerized opponent. I've spent months trying to master all the weird German and Japanese words (like "ich" and "dojo") that WordZap gives itself credit for. (Microsoft; 800-426-9400; Windows; Entertainment Packs 1-4: $39.95; The Best of Microsoft Entertainment Pack: $29.95)

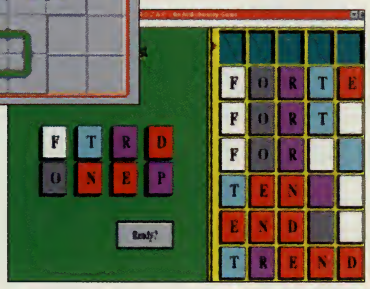


PipeDream would be considered work for plumbers.

Finally, the latest trend in having fun at work blurs the lines between games, gussied-up screen savers, and personal organizers. **Time Out Sports Baseball** is a perfect example of "utilitainment" (which apparently means "almost useful, almost entertainment"), and proves that goofing-off at work, not baseball, is really the national pastime.



Tetris may be Russia's revenge on capitalism.



Writers seem to love WordZap, featured in Microsoft's Windows Entertainment Pack 3.

The first in a series that will include other sports, Time Out Sports Baseball consists of a low-grade personal information manager and five mini-games. You can use your mouse for batting practice, to shag fungo fly balls, or, in the stupidest module, swear at the umpire. If the boss catches you playing this one, you might as well pack up your desk on the spot. (Microleague Interactive Software; 800-334-6572; Windows, $29.95)

Remember, all work and no play makes for a dull day. Any of these games will break the tedium of business drudgery, but they're not the only options for playing when you're supposed to be working. My advice? If you think you can get away with it, go for it.

You Are Now Entering a Game-Free Zone

The company policy toward computer games is simple at the City Paper, a popular weekly newspaper in Philadelphia. If you're caught playing a game on one of the many well-equipped Macs in the paper's office, you lose your job.

"It's kind of nasty," admits Bruce Schimmel, publisher, president, and owner of City Paper. "But it works."

Bosses' fears about employees playing computer games on the job may be justified. Estimates of lost productivity from workers playing games range beyond $100 billion a year. That's why many companies enforce outright bans against computer games.

Other companies monitor employees' usage of networked computers in real time, or periodically scan employee machines to see what their hard disks hold. They say it's to check for viruses and pirated software, but the searches also turn up games and other illicit time wasters.

But that's only the beginning. At spreadsheet-maker Lotus Development, an enterprising network administrator has reportedly written a program that can tell when someone starts-up Solitaire. The program lets the unsuspecting user play for a few minutes, then reshuffles the deck at random intervals until the player gives up and goes back to work.

And Intel has made it a firing offense to start up a network game of Doom. An employee-sponsored Doom session reportedly brought the company's huge network to its knees not too long ago.

But most companies take a looser approach, expecting employees to get their work done and leaving it at that. A few companies welcome computer games as a way to help technophobic users get comfortable with their machines.

That's why such a draconian antigame policy seems out of character for City Paper, known both for its liberal stance on social issues and for embracing computers. The paper has dozens of Macs, three networks, and even a BBS. But not one game.

Why? With no computer-support department besides himself, Schimmel claims he needs to be careful about what people are running on the machines: "There's a lot of stuff out there that could really screw up my systems," he claims.

But he acknowledges it's more than that. The rule isn't specifically antigame—it prohibits all non-work-related use of office equipment—for phone calls, photocopying, postage, whatever. Because—get this—Schimmel truly believes he deserves employees' undivided attention and energy while they're on his payroll.

"If you're here, I'm paying you, you're working," he insists. "I'll be damned if I'm gonna have somebody sitting there playing Pong."

—Don Steinberg

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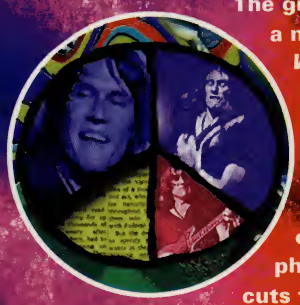

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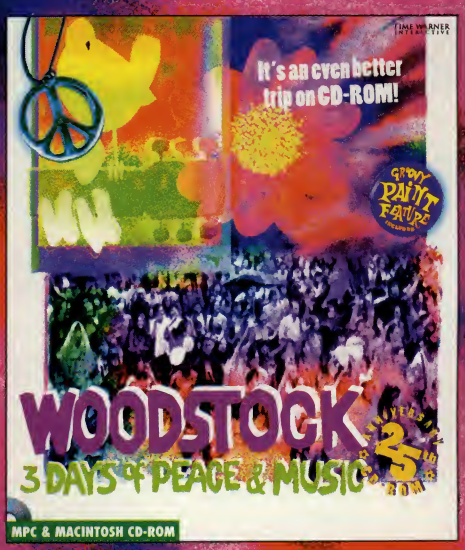

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how i became a

PC moviemaker, the sequel

The Multimaniac learns—the hard way—that Video for Windows is not ready for prime time.

by Paul Bonner

THEY CALL HOLLYWOOD BOULEVARD "The Street of Broken Dreams." And now I know why.

It's hard to believe, but the Multimaniac has been disappointed by the thing he loves most. Multimedia, the apple of my eye...the light of my life...the pipe to which I dance, has let me down. Left me angry and sad, drowning in a pool of sorrow and bile.

It all started when the Multimaniac decided to take another crack at the full-motion video-capture boards that stymied me back in the March issue of *E2* ("How I Became a PC Moviemaker," page 74). At that time, you may recall, none of the boards would run on my trusty old 386-based PC. Even a man of the Multimaniac's many talents could never quite eradicate an endless series of interrupt conflicts.

College or Computers?

But I really wanted to think of myself as Martin Scorcese, so I bit the bullet and upgraded my hardware base. Without telling the wife, I robbed the kid's college fund to come up with $1,000 to buy a new 66MHz 486 box with local-bus video and a few other trinkets.

After only a few hours, and a few thousand obscenities, I got the new stuff working with my existing CD-ROM drive, hard and floppy drives, sound card, monitor, and everything else. Once it was all up and running, the Multimaniac was finally ready to venture once again into the wonderful world of PC moviemaking. I can't tell you how excited I was. I just loved the idea of using my new video-capture boards to bring video into my PC to edit, sequence, arrange, and generally mess around with to my heart's content. What could be cooler than creating home movies on the PC's shimmering screen? It was going to be the ultimate Multimaniac experience.

At first, everything seemed to go well. I had two video-capture boards (which is one more than anyone needs) to play with—Media Vision's Pro MovieStudio and Creative Labs' Video Spigot for Windows. (Media Vision; 800-845-5870; PC, $449. Creative Labs; 800-998-5227; PC, $399.95)

I tried both boards, one at a time. It took only about 15 minutes each to install the video-capture cards on my new machine. (It would have taken years on the old clunker.) I just ripped the case off my PC, plugged in the cards, and hooked up the cables. To get started, I ran a small configuration program (DOS for the Pro MovieStudio, Windows for the Video Spigot). With my shiny new hardware, the interrupt conflicts that plagued my earlier efforts just disappeared—the result, maybe, of upgrading my system to the post-Eisenhower era.

Both boards worked fine. In fact, the only functional difference between the two is the hardware driver, which you hardly notice as a user unless it doesn't work. There were no noticeable differences in their performance or output quality, but this is not exactly a ringing endorsement for either product.

ILLUSTRATION BY RICK SEALOCK

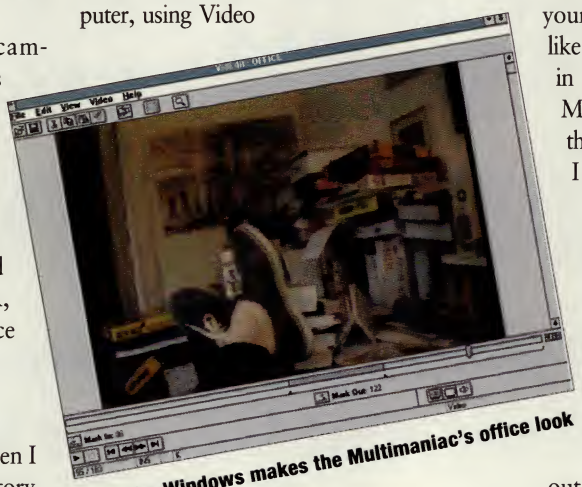
For all intents and purposes, the experience of using the two boards is nearly identical. Both use the standard interface for Microsoft's Video for Windows, the controlling software that comes with each one.

I used my Sony HandyCam 8 camcorder as a video source, linking its audio-out line to my sound card (a Media Vision Pro AudioSpectrum 16) and its video-out line to the video-capture board. As a new father, I'm required by law to own a high-end camcorder, but you could use just about any video camera, VCR, laserdisc player, or other video source you might have lying around.

A 2-Minute Life Story

My first indication of trouble came when I recorded the introduction to my life story, a two-minute video-only (no sound) tour of my office. When I called it up on the computer, I discovered that it had eaten 120MB of my hard disk. I knew that digitized video was hardware-intensive, but geez, Bob Dole treats Clinton's health-care proposals better than that.

The culprit, I soon realized, was Video for Windows. To put the matter as delicately as possible, Video for Windows stinks. Unless your PC is as powerful as a Cray supercomputer, using Video for Windows means making one unacceptable tradeoff after another. If you want decent performance, you've got to go with a high-compression ratio and a postage-stamp picture, though it still uses hard disk space faster than Letterman tells Madonna jokes. If you want to save disk space, you've got to compress your digitized video even more—throwing away most of the detail in your images—or slow down your frames-per-second rate until it looks like the people on your screen are dancing in front of a strobe light. As much as the Multimaniac loves *Saturday Night Fever,* that's not quite what I had in mind when I resumed my moviemaking career.



Video for Windows makes the Multimaniac's office look even worse than usual.

I was stunned. After all, every multimedia publisher on the planet seems to use Video for Windows. I've probably got 40 or 50 CD-ROMs that use Video for Windows. Everything from Microsoft Encarta to Compton's Lifestyles of the Rich & Famous Cookbook uses it, and I don't hear them complaining. I couldn't figure out why I was so disappointed with the results I was getting, so I went back and looked at some of those CD-ROMs to see what kind of mileage they were getting out of Video for Windows.

I didn't like what I saw. Thirty seconds of the Hindenburg explosion—about the size of a match head. Fifteen seconds of a tiny Jerry

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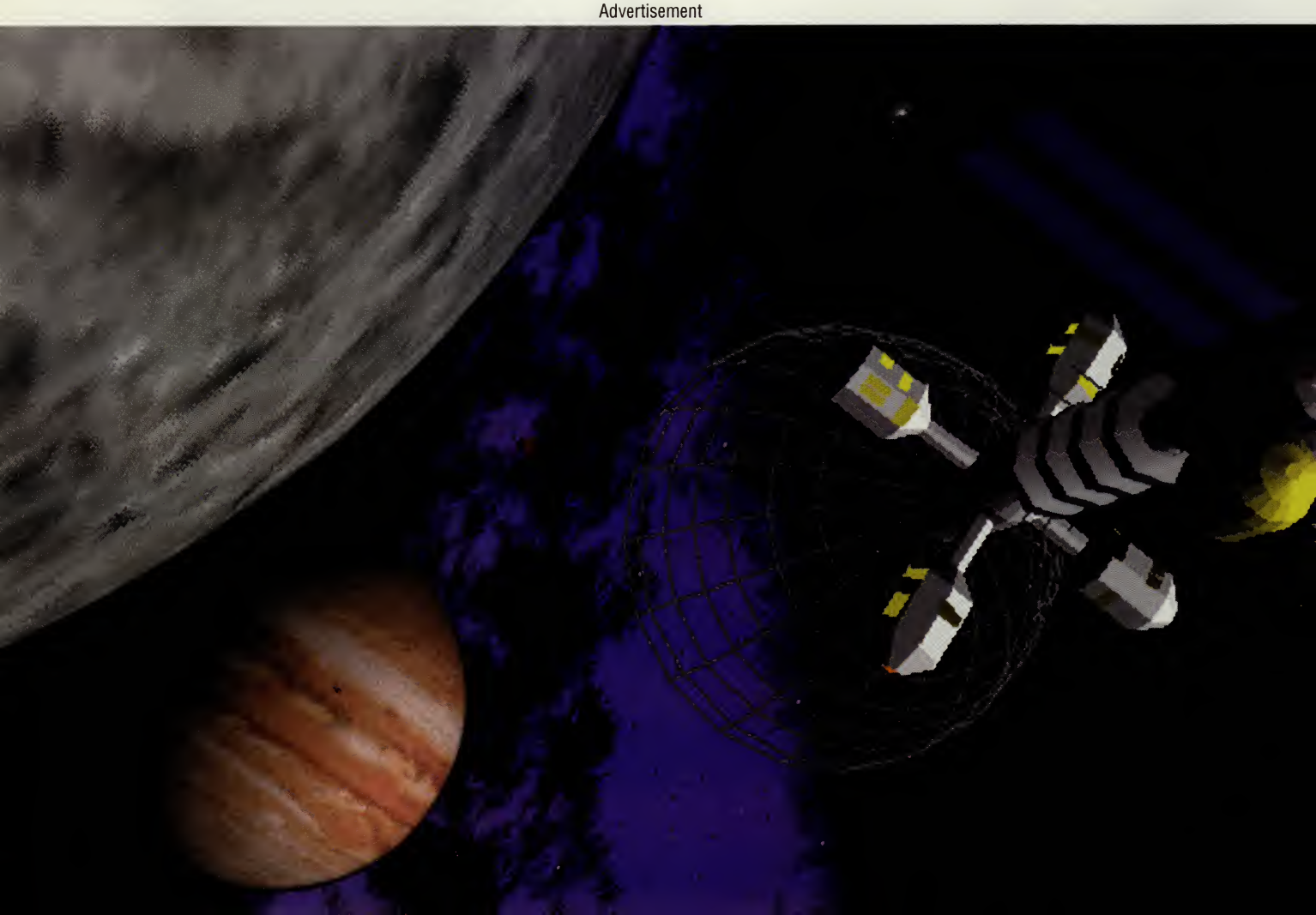


Lewis dancing around. A quick sound-and-video bite of Kennedy's Berlin Wall speech—and all of it so jerky and grainy and small that I had to squint to be sure of what I was seeing. I could just picture people trying to view this stuff in homes all across America.

"Look, dear, it's Jerry Lewis at the K-Mart."

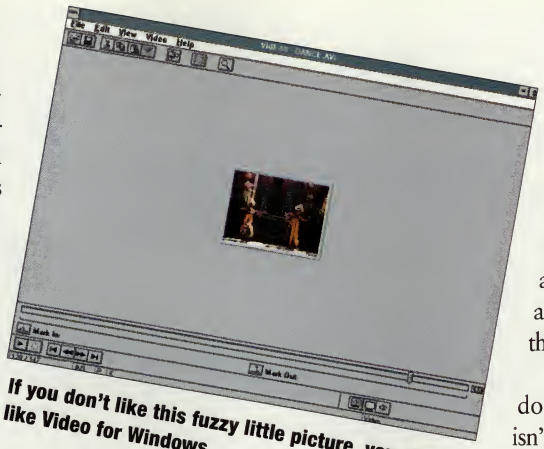
"No, you bumblebrain, that's JFK at the Berlin Wall."

In fact, as I checked out the Multimaniac's multimedia collection, I noticed that the majority of the titles' makers spent most of their energy trying to disguise the low quality and short duration of their video clips.

Well that's fine for them, but I can't work under those conditions. When the Multimaniac makes movies, he wants them in glorious 800-by-600 high-resolution Technicolor, not in a grainy 160-by-120 window. He wants poetry in motion, not some cheesy flip-book effect.

Technology to the Rescue?

Of course, it doesn't have to be this way. Video for Windows is capable of recording



If you don't like this fuzzy little picture, you won't like Video for Windows.

at larger image sizes with more detail and more frames per second. But not on my measly 486. If you're going to take advantage of Video for Windows, you'd better have a 90MHz Pentium with gobs of memory, a full-gigabyte SCSI-2 hard drive with a BIG cache, a digital audio tape (DAT) drive for archival storage, and a super-high-performance video card.

Just as important, you'd better give the same setup to everyone you'll want to view your creation. On any platform less grand than that, watching Video for Windows clips is like looking through the wrong end of a telescope to contemplate running tree sap.

I've just finished upgrading my machine, and I can't afford to do it again right now. That's why I'm going to wait for better technology to come along—and become a lot more affordable—before I give this moviemaking thing another shot.

Exactly what that technology will be, I don't know. QuickTime for Windows isn't much better. I've seen Sigma Design's ReelMagic MPEG board, and I like what I see. But the less than $500 ReelMagic card works only for decoding and watching full-motion movies on your PC. Creating and encoding movies—a key element in becoming a PC moviemaker—takes far more complicated and expensive gear.

But hey, just because the Multimaniac is a true *artiste* and can't stomach making a movie that looks like it was shot in 1904 and stored under the costume director's bed for 90 years, doesn't mean it will bother you. Hollywood—and Silicon Valley—is full of fabulously rich moviemakers with incredibly low standards. Are you one?

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Microsoft Home

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TAKE 2 INTERACTIVE SOFTWARE

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State of the Game

E² REVIEWS, TIPS, AND STRATEGIES FOR THE HOTTEST PC, MAC, AND CD GAMES

Mousing Around

The Mouse Age is upon us. A growing number of games not only support but require the little rodent. Some developers seem intent on making us mouse around with their interfaces even if it isn't the best tool for playing the game.

In this month's State of the Game, you can see several examples of mouse use, good and bad. Sierra's Goblins series has always made for good mousing, and Goblins Quest 3 is no exception. The little guys dutifully follow your pointer, no matter what peril you lead them to.

But a poorly designed mouse interface can put your characters in danger whether you want them there or not. In Hexx: Heresy of the Wizard, the mouse can't keep up with the action. And in Shadow of the Comet, the mouse makes it too easy to run into things.

Gamemakers should realize that a mouse is just another input device. It shouldn't be the only one they design for. As long as they keep that in mind, everything should click.

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Online Update

Online entertainment options just keep getting better. Services such as Delphi, Prodigy, and the ImagiNation Network are offering ever-snazzier games designed to lure you into their electronic lairs. And plenty of other companies are scrambling to create products and technologies to enhance the experience.

Battle CyberPods in GEnie's CyberStrike.

One example is AT&T's VoiceSpan technology, which allows you to send voice and data simultaneously over a single telephone line. Imagine how intense your battles will be when you can hear your opponents' taunts and battle cries as you go head-to-head.

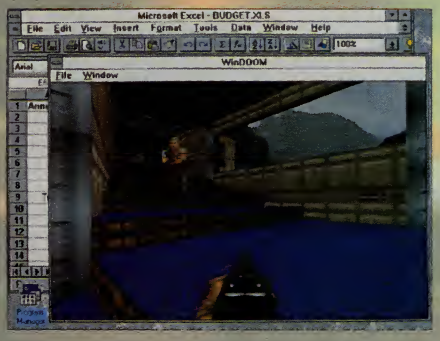
One of the first consumer implementations of VoiceSpan will be the Edge 16 add-on for the Sega Genesis, but AT&T promises consumer-oriented VoiceSpan-capable modems from several vendors for PCs and Macs soon, at less than $200 each.

But don't wait till then to try online gaming. In the meantime, check out the new, improved action on GEnie. The service is in the process of rolling out Simutronic's CyberStrike, a multiplayer tournament of CyberPods, which bears a stiking resemblance to the menacing ED-209 in the *Robocop* movie.

Teams of CyberPods wander CyberCity, trying to take over territory and take out opposing Pods. As a CyberPod, you control your turf by planting power-relay towers that generate the juice necessary to keep you running. Get too far from your power grid or get take too many shots, and you become CyberSalvage. CyberStrike software is available free of charge to all GEnie members. (GEnie; 800-638-9636; DOS; $8.95 a month for 4 hours, $3 for each additional hour)

Scouting Report

Gaming News You Can Use



Doom in action in Windows with WinDoom.

Because of its speed-sapping graphics-overhead, Windows hasn't exactly been a hot gaming environment, but now a couple of companies, including Microsoft and upstart Vogonnian Softwerks, are hoping to change all that. Microsoft recently demonstrated WinG, a new graphics-development library for game makers who want to get serious about Windows games. WinG lets Windows games approach the performance of their DOS counterparts. Even a demo of Doom that used WinG looked good. Games built with WinG will run under Windows 3.1 and the next version of Windows, code-named Chicago.

■

Meanwhile, Vogonnian, in Severna Park, Maryland, is building an exploration/adventure game based on its own high-speed Windows animation engine, and is offering to license the engine to other developers. Why would game makers bother writing Windows games at all? There's at least one good reason: Chicago reportedly won't allow a computer to run both itself and stand-alone MS-DOS. All games will either have to run under Windows or work in a Windows DOS box, which can be risky business for developers who like to push DOS' limits.

■

Speaking of risky business, Advanced Idea Machines is trying to take advantage of the advanced memory-management and multitasking capabilities of OS/2 that IBM has long been hoping to entice gamers with. IBM recently touted Galactic Civilizations and SimCity for OS/2, a pair of 32-bit OS/2 games by the Draper, Utah, company. Galactic is a space-conquest game that fits the classic mold of exploration, trade, and conquest. You can set the artificial-intelligence level of computer opponents to make things as easy or difficult as you want. But the biggest boost OS/2 gives Galactic is that the computer opponent can take its turn while you perform other tasks in the game. SimCity for OS/2's improvements are more subtle, but you should notice that you can also perform several tasks simultaneously, such as managing your city's budget while putting out fires, instead of having to close one area in the game to deal with another. A multiplayer version is on the drawing board. Both games are due on store shelves this month, and AIM hopes to have a dozen OS/2 games on the market by the end of the year.

■

If that's not enough OS/2 fun, Big Blue is also pushing a 32-bit version of Doom, talking to

PITFALL: THEN AND NOW

Activision's Pitfall has found a home on more than seven million Atari, Amiga, IntelliVision, Nintendo, Super Nintendo, Sega Genesis, Sega Masters, DOS, and Macintosh systems since its debut in 1982.

PITFALL

Fittingly, the original Pitfall arrived the year the Great Communicator was funding a jungle war in Nicaragua. David Crane's 1982 hit for the Atari 2600 (later ported to every imaginable platform, including the Commodore 64 and Intellivision) required a measly 8K of memory.

PITFALL II: LOST CAVERNS

Pitfall's leading man, Harry, got treasure fever again in 1983 and returned to the early game systems. While Harry contended with bats, lethal frogs, and scorpions, Sally Ride became the first woman in space, researchers discovered the virus that causes AIDS, and 241 U.S. Marines were killed when their Beirut barracks was car-bombed.

SUPER PITFALL

The third Pitfall appeared in 1987. Harry Jr. had become a Japanese commodity, searching for the Raj Diamond in the Andes Mountains on the 8-bit Nintendo Entertainment System. That same year, Reagan and Gorbachev signed the INF Nuclear Reduction Treaty.

PITFALL: THE MAYAN ADVENTURE

It's 1994, and as Whitewater boils and health-care reform slowly sinks, Harry Jr. is set to run, jump, bungee, swim, and skateboard through the Mayan ruins of South America on the Sega Genesis, Super NES, and PC. You can even unearth the entire original game on one of the latest version's 14 levels. *–Bill Meyer*

Game Ratings Key

Games are rated from 1 to 5 in four categories. A rating of 1 means it couldn't be much worse, and a 5 means it doesn't get any better.

Game Play: A high score says this game will keep you coming back for more.

Getting Started: The game loses points if you'll spend more time reading manuals and learning commands than playing.

Graphics: Image isn't everything, but hot graphics can make even mediocre games worth a second look.

Value: The higher this rating, the better you can feel about getting out your wallet.

If you see a bug, you might notice them in the game, too.

Look here for hints and tips to help you get started or keep you going in the tough spots.

Sometimes our reviewers find "undocumented" tricks that help tame killer titles.

This lists a game's minimum system requirements, including processor, memory, and video needs.

Maxis about a port of SimCity 2000, and planning to include a pinball game in the next version of the operating system. IBM also promises big improvements in CD-ROM game play, since the operating system can read the data stream from the disk while you play onscreen.

■

3DO owners should be on the lookout for a cool new title from P.F. Magic. In Pataank! you get a ball's-eye view of a frantic journey inside a high-res pinball machine. Early viewings of the game demonstrated manic game play and great graphics that twitch gamers should love. Look for it in September.

Take a wild ride inside a pinball machine in Pataank!

■

In other 3DO news, rumors on America Online hinted that Virgin Games has delayed the release of Demolition Man until September. The rumor has it that the company wants to enhance the game play and try to avoid the Jurassic Park Syndrome—all graphics and no guts. In its final incarnation, the game reportedly will have both first-person 3-D sequences and fighting-game levels.

■

Virgin's affiliated labels have a few irons in the fire, too. Demos of Westwood Studios' Lands of Lore II look spectacular, and the makers promise oustanding first-person-perspective action. Unfortunately, it will be a while before we can verify their claims, because the game isn't due out until April of '95. That's time enough to get yourself another CD holder—Lore II is slated to take up three discs. And Trilobyte has pushed back the release date for The 11th Hour to later this fall in order to make some final tweaks, including the possible addition of an online hint feature accessible directly from the game. The fate of the much-ballyhooed nude shot remains to be determined, too. It has already been pulled from the PC version of the game, and Trilobyte is trying to decide whether to use it in the 3DO version. 3DO apparently wants it to stay, but Trilobyte is reported to be worried about the press reaction.

■

If you've been wandering the world of Bullfrog's Theme Park, you may be interested to know a bit about the people who created it. One member of the development team, Demis Hassabis, got his job not by applying for it, but by winning it. Bullfrog held a contest among British students to see who could create the best alternative version of Space Invaders. Hassabis's version, which placed the invaders around a chess board, won him the job. He won't be staying around much longer, though. The 17-year-old is headed off to Cambridge later this year to study computer science.

Al-Qadim: The Genie's Curse

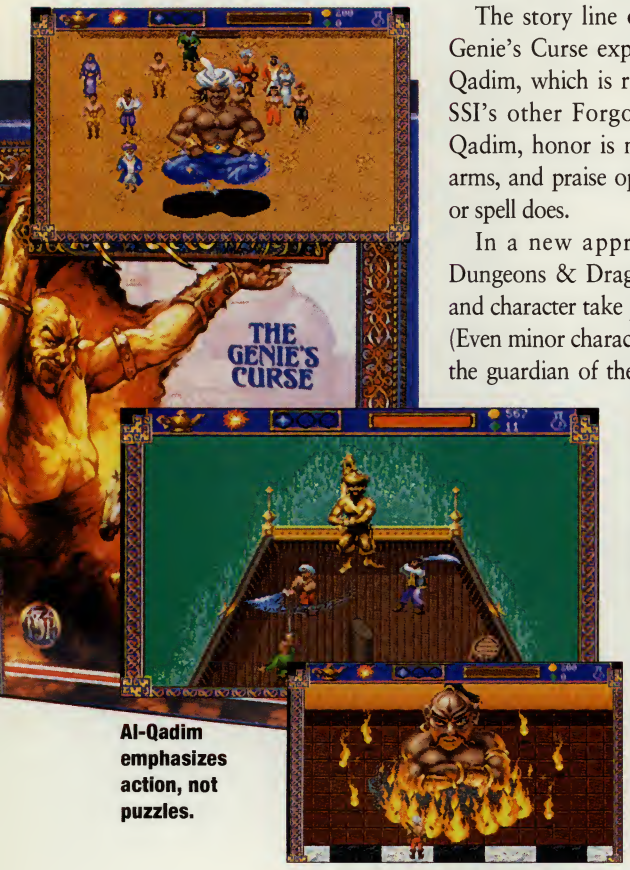
By Al Giovetti

Flattery will get you everywhere in Al-Qadim.

Exiled from his home, Ahmad Al-Hazrad has been granted one month to rescue his kidnapped betrothed and prove his family innocent of conspiring to kill the Caliph. To accomplish his mission, Al-Hazrad must traverse acid-filled dungeons and genie-populated isles and uncover the sinister plot that threatens his world.

The story line of Strategic Simulations' The Genie's Curse exploits the exotic world of Al-Qadim, which is richer and more complex than SSI's other Forgotten Realms worlds. In Al-Qadim, honor is more important than force of arms, and praise opens more doors than a sword or spell does.

In a new approach to the old Advanced Dungeons & Dragons formula, story line, plot, and character take precedence over puzzle solving. (Even minor characters such as the genie lords and the guardian of the great library possess intricate personalities, some of which are so annoying that you want to kill them, even though doing so will end your game abruptly.) And when you do fight, you find that real-time arcade-style combat with slings, scimitars, and spells replaces turn-based combat. The emphasis on story, character, and action makes Al-Qadim appropriate for novices who want to experience the fun of role playing without having to learn a complicated set of rules and customs.



Al-Qadim emphasizes action, not puzzles.

It might be unwise to stick your sword in him!

Colorful and highly detailed 256-color graphics and animations bring to mind the sets of classic *Sinbad* movies, while a smooth-scrolling top-view perspective resembles those of other SSI role-playing games such as Dark Sun: The Shattered Lands. But Al-Qadim also contains many new features designed to make the game easier for casual players and those unfamiliar with role-playing complexities.

Mouse and joystick controls dominate the game, which will delight the point-and-click crowd but disappoint keyboard-oriented role players. The designers have also eliminated character-generation options in favor of a single pregenerated character. But you can modify the aggressiveness and strength of the game's 23 monster types depending on how you feel about getting blood on your hands.

The effects of these modifications are not all positive, even for role-playing novices. A lack of auto-mapping, for example, "simplifies" things by forcing you to map or memorize complex mazes and cities. And you're limited to an inadequate total of nine saved games.

Despite the game's shortcomings, the story behind the genie's curse is engaging. Highly detailed, colorful graphics and well-written music add to the experience. Newcomers will find the game a painless introduction to the world of role-playing adventure, but serious role players may be put off by the arcade-style action and lack of puzzle complexity. (Strategic Simulations; 800-245-4525; DOS, $70)

☞ Be very polite with everyone you meet, including enemies. You catch more flies with honey than with vinegar. ☞ Find the mermaid in the oasis pool, but don't tell anyone. Deliver the mermaid's message and return to her after you are exiled from Zaratan. ☞ To gain admittance to the library stairs down to level two, you must step on all five lavender crosses, which open the spikes below the chest in the south. ☞ In the hermit's labyrinth, break all vases and kill fire elementals quickly, or they will burn the bridges needed to complete the level. ☞ To get rich, gamble in the imperial city after saving your game in the gambling den. If you win, save the game; if you lose, restore.

PSST!

386/33, 4MB RAM, MS-DOS 5.0, VGA, sound card

GAME PLAY:	
GETTING STARTED:	
GRAPHICS:	
VALUE:	

An excellent game for new players, but oversimplification and real-time combat will limit its appeal to experienced role players.

You're not the first human to battle the ancient alien legacy.

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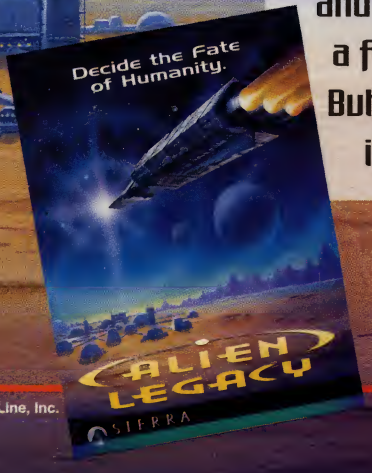

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Hexx: Heresy of The Wizard

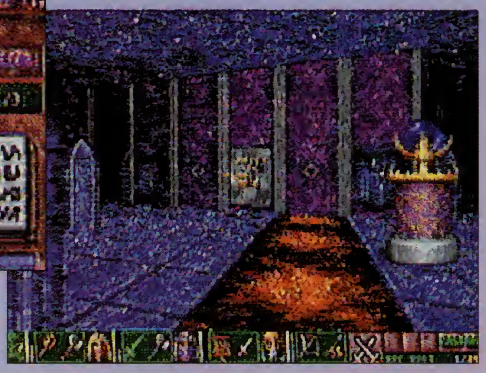
By Barry Brenesal

Choose your 4 Hexx teammates from 16 preconfigured characters.

Let's face it: 3-D dungeons are in. There are so many of them dotting the underground fantasy landscape that pretty soon you'll need a subway map to keep track of them. Now Hexx: Heresy of the Wizard joins the crowd with great graphics tied to a mouse-driven interface.

Visit the dungeon shops to buy weapons, armor, and magic items.

Hexx involves a power-mad mage who has banished the four gods of the world into another dimension and encased their abilities in talismans located in fiercely guarded towers, caverns, and labyrinths. You command a party of four adventurers who must find the talismans and combine them to free the gods and defeat the evil wizard.



Hexx lets you shrink your character displays for a much larger view of its dungeon world.

Game play calls for plenty of armed combat. As you open doors, you face off against powerful warriors and magicians. (Killing them yields gold, which can buy weapons, armor, food, and magical artifacts.) Occasionally, though, you have to use brains and not brawn to master fields of teleporting plates, hidden entrances, and spell-negating rooms.

And despite the action element, strategy is all-important. You assemble your team from 16 wannabes rated for strength, intelligence, dexterity, and constitution. Each adventurer is affiliated with one of the four captured deities and has extra competence with that god's group of spells. Each member also belongs to one of four professions, giving him distinct advantages wielding particular weapons and magical skills. Keep in mind that a well-balanced party can mean the difference between success and ending up as adventurer fondue.

The bright, almost garish visuals in Hexx may startle you after the dull, dark palette of most dungeon games. You may even want to turn down the contrast on your monitor. Animation is very fluid for your party and its foes while you're traveling, but attacks are more jerky.

Unfortunately, Hexx's mouse-based interface has trouble handling the game's large number of characters, spells, and objects. You have to left-click, right-click, and double-click on portraits, inventory areas, spellcaster areas, and book icons with eight separate pages of spells for each team member—all in real time. It can be a real problem if you're under attack. Maybe the programmers should try an exciting new way of easing these tasks: It's called a keyboard.

Hexx also lacks the sheer variety and dungeon logic of Origin's Underworld series, and it can't match the fluid graphics and furious action of Doom. On the other hand, it's colorful and filled with nasties, and you can replay it using different teams and alternate strategies. All that makes Hexx a solid, up-to-date hack-and-slash game that's tough to master but fun to play. (Psygnosis; 800-438-7794; DOS, $49.99)

☞ Buy Ethblade scrolls when you find the first magic shop. Ethblade generates high-level weapons with double attacks. Your characters keep the weapons until they fall sleep—very useful for novice adventurers. ☞ When you run across anti-magic rooms filled with foes, stand outside the doorway and cast spells at them.

PSST!

386/20, 2MB RAM, MS-DOS 3.3, VGA/MCGA, Microsoft-compatible mouse

GAME PLAY:	★★★
GETTING STARTED:	★★
GRAPHICS:	★★★
VALUE:	★★★

A first-person 3-D dungeon quest hobbled by a difficult interface.

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Inherit the Earth

Young Rif must prove his innocence to his accusers.

By Barry Brenesal

They're called Morphs: all the animal groups of Earth that were granted self-awareness by Humanity before it left. They received other gifts, as well: speech, the ability to walk upright, and the magical orbs. But the Orb of Storms has been stolen, and suspicion falls on young Rif of the Fox Tribe.

Thus begins Inherit the Earth, the first graphics adventure from New World Computing. The company is best known for the excellent Might & Magic role-playing series, which recently concluded an extended run of five best-selling episodes. Inherit the Earth gives New World a chance to try out some new graphics before it launches its next major series later this year.

Rif of the Fox Tribe will need help in his quest.

Beautiful scenes await you on posthuman earth.

If you're a graphics-adventure fan, prepare to be impressed. Inherit the Earth's visuals will blow you away. Every scene has something to catch your eye, including magnificent buildings in the background and minor characters that scurry across the screen. Character animation is somewhat jumpy, but it's a worthwhile trade for Inherit the Earth's speed. You'll need that speed considering the game's close-to-the-ground perspective and wonderfully detailed turf.

Other attractive touches abound. Enter a building, and the game usually brings up a screen-within-a-screen showing the structure's interior. A dialog bar displays portraits of conversing characters, and their images change to match their moods.

The story line is linear but well realized. You control only Rif, but he's accompanied by two other, very different animal personalities: a strong, pushy boar and a noble, if conceited, elk. As the tale unfolds, you meet other animal tribes—an underground monastery of rats who treasure knowledge and a village of ferret tinkers.

You'll appreciate Inherit the Earth's spectacular graphics, but you may be disappointed by the game-playing elements. Puzzles are very simple, and experienced players may find all the objects needed to complete a mini-quest before the quest itself has been assigned. There are a few simple mazes and a jigsaw puzzle that may require some outside help to prevent frustration, but even here the game is very forgiving. Wait long enough before adding puzzle pieces, and a secondary character offers hints.

And even children might grow bored with the limited interaction in Inherit the Earth. The puzzles are relatively few, and much of the action and dialog occurs in "cut sequences" where you have no control over what is said or done. Still, Inherit the Earth's visuals, story, and soundtrack never fail to delight. Not so much a graphics adventure, Inherit the Earth is more like a well-told multimedia fairytale, with a few gaming elements thrown in. (New World Computing; 800-325-8898; DOS/CD for DOS, $59.95)

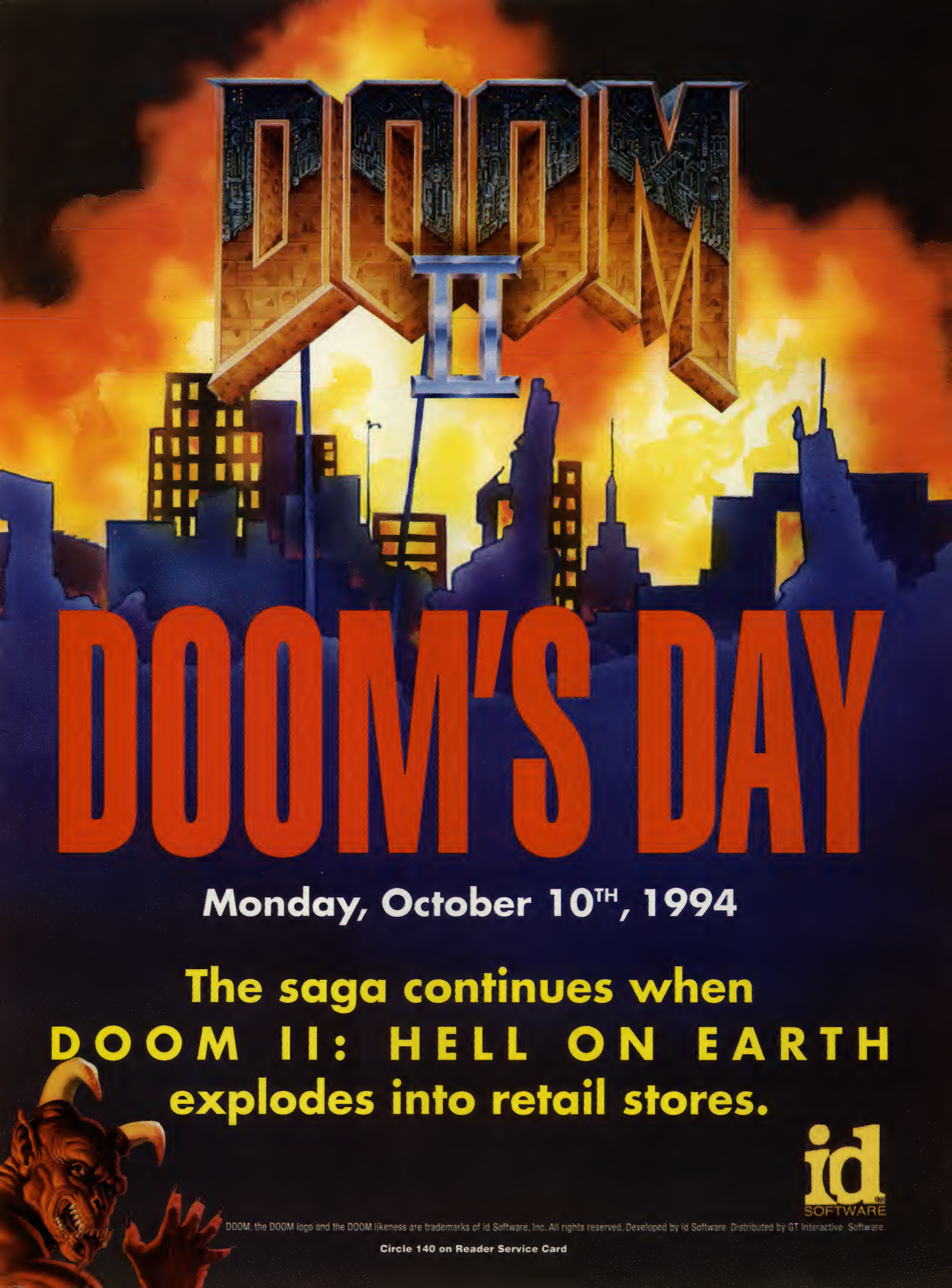
PSST!

☞ When you lose your friends in Prince's dungeon cell, just attend to other quests for a while. ☞ Check out every area thoroughly. Nothing is hidden, but some clues get lost among the details. ☞ If you're stuck on a problem that requires brute strength, ask the boar for help. If you need dexterity—jumping across mountain ravines, for example—ask the elk. ☞ Pick up everything you can find. There are no limits to inventory.

386, 2MB RAM (4MB for CD version), MS-DOS 5.0, VGA, mouse

GAME PLAY:	2
GETTING STARTED:	5
GRAPHICS:	5
VALUE:	4

Inherit the Earth's graphics are nothing short of spectacular, but its puzzles are too easy.



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Circle 140 on Reader Service Card

Shadow of The Comet

By Rusel DeMaria & Alex Uttermann

Cinematic cut scenes add dramatic touches.

The town of Illsmouth is in a heap of big trouble. The year is 1910, Halley's Comet is due to appear in two days, and John Parker, your character in this H.P. Lovecraft–inspired tale, is gung-ho to solve the mystery that's clinging to Illsmouth like some monstrous hangover.

All the standard Lovecraft plot elements are here—the disturbing cult in the woods, obscure Satanic books in the library, and uncooperative townspeople—not to mention the water demons who've been controlling Illsmouth since the last passing of Halley's Comet and those unexplained, gory deaths that seem to occur at regular intervals. Your mission: uncover the clues while avoiding over-zealous police, hotheaded cult members, and a surly Indian sorcerer. Oh yeah, and stay alive in the process.

There are places in Illsmouth you don't really want to visit. Ah, but you must.

Shadow of the Comet combines the (more or less) ordinary life of a small, New England town...

. . . with some pretty grisly events.

This is one of those games in which the imbalance between gaming satisfaction and frustrating detail is prevalent. It's an absorbing tale, but the conversations with the locals, are horribly time-consuming. Humoring them along as they reveal the clues you need means sitting through sequences that mix dreadful overacting with zombielike stone faces.

Other imbalances crop up as you muddle through some pretty ordinary graphics to discover a few beautifully rendered bits, as if the artists saved up their inspiration for when it really counted.

At first glance, the game may seem easy. The early puzzles—rearranging tiles to create a ghoulish picture, for instance—don't require a Sherlock Holmes. First appearances can be deceiving, though, and gamers who like challenges will be pleased to find many obscure puzzles that require frequent use of the Save/Load feature.

But while challenge is a good quality in puzzles, it's not desirable in an interface. As you maneuver Parker through town and forest, he gets hung up on shrubberies and can't quite make it through the doorways. In some critical places, it's imperative to use the directional keys on the keyboard, not a mouse, and the lack of a diagonal control may drive you nuts. Installation was no picnic either, involving changes to the CONFIG.SYS file. Once installed, though, Shadow of the Comet ran fine.

Fans of H.P. Lovecraft and his genre will find Shadow of the Comet an unusual and interesting game despite the aggravations. Once you get past the cranky interface and stodgy beginnings, the plot thickens nicely, and you'll wonder just what new horror will occur next.

For most people, though, the Comet just misses. A more accessible interface and a more balanced approach to graphics and acting would have created a more entertaining game with wider appeal. (I-Motion; 800-443-3386; CD for DOS, $79.95)

386/16, 2MB RAM, MS-DOS 5.0, VGA, sound card

GAME PLAY:	℮² ℮² ℮² ℮²
GETTING STARTED:	℮² ℮² ℮²
GRAPHICS:	℮² ℮² ℮²
VALUE:	℮² ℮² ℮²

An absorbing, original, and suspenseful game with great characters, difficult puzzles, literary style, and genuinely creepy moments. Just try to overlook the spotty graphics and acting and the incredibly finicky interface.

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(Sorry. No Blimp.)

Circle 173 on Reader Service Card

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Also available on CD-i.

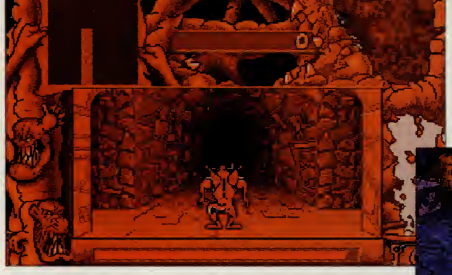
CapDisc

1-800-CAP-DISC

NFL™

Litil Divil

By Peter Olafson



At this crossroads in the tunnel section, you've got three roads to hoe, and all of them are dark.

The only thing you can afford in the gift shop right now is the door.

What do you get when you cross an arcade game with a puzzle adventure in a crazy cartoon world? You get a charming Litil Divil, an enormously enjoyable and varied journey out of Hell.

Litil Divil, distributed by Philips Media Games, is a creation of 8th Day—the people responsible for the action/adventure Heimdall and the platform game Premiere. You'll see many of echoes of the cartoon handiwork of those earlier games here.

You control Mutt, a cranky demon (he'd rather be sleeping) who draws the short splinter at the Grand Council meeting. His assignment: puzzle his way out of a five-level labyrinth to retrieve the Mystic Pizza of Plenty from the Overworld. (What, they don't deliver?) It's a task from which divils, litil or big, do not generally return.

Your first challenge. Four good whacks will do the trick.

In an early puzzle room, Mutt meets the mother of all spiders. You can smush her kids with your feet.

Compared with a vicious shoot-'em-up like Doom, Litil Divil is spun sugar. The game is divided between tunnels (scrolling, three-dimensional affairs typically seen from a point just south of Mutt's little red rump) and the 40-odd rooms those passages link together. The rooms contain puzzle sequences, typically seen from an aerial perspective, and constitute the meat of the game. These puzzles are indeed the devil's work, though they start out relatively simply.

The branching, maze-like tunnels (you'll be grateful for the onscreen auto-mapper) aren't much easier, but the dangers are at least predictable. There are pits to fall into, flames shooting from the walls, and shockers on the floor. Divils who avoid the traps earn rewards, usually in the form of cash to spend on useful items. You never feel you've dropped out of the game into a cut-scene animation because you're always playing in this game.

Litil Divil has personality. Left alone too long, he opens a newspaper or falls asleep and starts dreaming about a leggy woman in a tight blue dress or sheep jumping over fences. If he dies—and he'll die a number of times before you scope out the well-hidden pitfalls—he's yanked off screen without ceremony. When he falls into a pit, gravity is briefly suspended—as in a Wile E. Coyote cartoon— before he takes the plunge.

That's not to say the game is perfect. The copy protection code wheel is annoying, and you can save games in only one room per level. And while this divil may be litil, he has a whole lot of luggage: All those sweet little nuances add up to a 30MB chunk of your hard disk, making the CD-ROM version *the* choice. Either way, you'll want to make room for Litil Divil. (Philips Media Games; 800-824-2567; DOS/CD for DOS/CD-i, not yet priced).

PSST!

☞ Belt the bridge troll with your staff just after he starts to make his move. Don't worry about the punishment you take from his club in the process. ☞ Take it slow in the tunnels, and steer clear of anything that looks even slightly out of the ordinary. ☞ Note room locations on the Labyrinth of Chaos graph paper included with the game. The auto-mapper is handy in corridors, but it doesn't let you annotate your progress. ☞ You can't afford anything in the goodies room at first, but it's a good idea to check in there anyway. Look for the 3,400 gold pieces nearby.

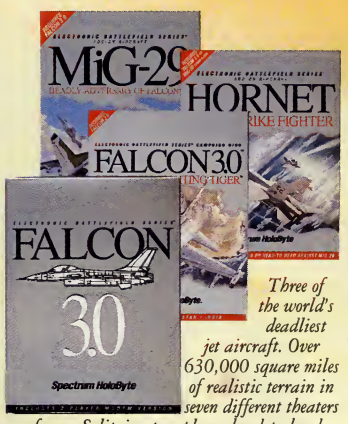
386, 4 MB RAM, VGA

GAME PLAY:	F² F² F² F² F²
GETTING STARTED:	F² F² F²
GRAPHICS:	F² F² F² F²
VALUE:	F² F² F² F²

A delightful interactive cartoon of a game, festooned with touches right out of Chuck Jones and Tex Avery animation classics. It's got enough trickery to keep the divil in you occupied for weeks.

FALCON GOLD: THE BEST-SELLING COMBAT FLIGHT SIMULATIONS OF ALL TIME NOW IN ONE HANGAR.

The complete collection of *Falcon 3.0* flight simulations plus *Art of the Kill*, the ultimate dogfighting trainer, on one CD-ROM!



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Goblins Quest 3

Goblins Quest 3 serves up a novel assortment of characters in a strange and puzzling world.

By Wayne Kawamoto

Despite everything the word *quest* suggests, Sierra's Goblins Quest 3 is no conventional adventure game—it's an inventive, entertaining, and twisted walk on the wild side, where unusual, devious, mind-bending puzzles make for a new kind of experience.

As in previous Goblins titles, oddball characters and situations abound in a goblin world. Strange humanoid and animal characters babble gibberish and take every manner of comical pratfall. Goblins Quest 3 has all the elements of a standard adventure game, with objects to collect and use, puzzles, and a linear plot, but the game play is, for lack of a better description, goblinlike.

386, 2MB RAM, MS-DOS 5.0, VGA, sound card, mouse

Your characters must work together to solve the puzzles. Here you have to find a way past the guards.

You begin as Blount, a noted goblin journalist who wants to get the scoop on a strange mountain and the kingdoms that feud over it. But Blount soon finds himself a participant in the mystery rather than an observer. You control Blount and his comical colleagues as they attempt to solve the mountain's many mysteries and avoid its traps.

Blount may be resting at the beginning of the game, but he's about to embark on the adventure of a goblin lifetime.

The puzzles vary in quality—some are straightforward and logical while others require you to run through combinations mindlessly. Puzzle solving by constant trial and error can get tedious, and finding objects on some screens can be difficult. Worse, some puzzles make you repeat the same task several times before they work properly.

The puzzles require Goblins' tried-and-true formula of team effort—you must continually change characters to take advantage of special talents. Timing is also important: Many puzzles require multiple characters to act simultaneously. To make things easier, characters sometimes provide clues. And if you get absolutely stuck, you can call up one of five free level-solving hints. Use them carefully—you won't get more.

The puzzles may be complex, but the game itself is easy to play. Click on characters to activate them, then click on objects to pick them up or use them. Goblins Quest 3's graphics are excellent, with particularly eye-catching backgrounds. The game also makes fine use of weird sound effects and dialog.

Goblins Quest 3 is a kinder, gentler approach to strategy games. Its bloodless cartoon-style violence makes it appropriate for families with young children. This brain-busting roller-coaster ride is sure to make new fans and delight the old. (Sierra On-Line; 800-743-7725; DOS, $24.95; CD for DOS, $29.95)

GAME PLAY:	3
GETTING STARTED:	4
GRAPHICS:	4
VALUE:	4

Goblins Quest 3 offers challenging puzzles in an unusual world. The first-rate graphics and sound effects enhance the experience. It should appeal to many gamers, particularly younger ones.

It's time you finally did something about those monsters under your bed.

3DO

You're not a helpless kid anymore. You've grown up and you've got *Slayer*, the first ADVANCED DUNGEONS & DRAGONS game on 3DO.

Now you're an AD&D game hero armed with weapons and magic, exploring dungeons filled with the deadly monsters of your nightmares.

Hack and slash away at these vile creatures, avoid treacherous traps and solve mind-bending puzzles.

The randomized dungeon generator can create over *4 billion* different dungeons.

Which means a new monster hunt every time you play!

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It's virtually real!

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Castles II: Siege & Conquest

By Barry Brenesal

Charles of Clossau, the king of medieval Bretagne, is dead. Can you, as one of five pretenders to the vacant throne, succeed him? Victory requires an artful mix of diplomacy, trade, intrigue, and force. Combine all four elements, add a pinch of uncertainty, shake well, and you have the recipe for Interplay's excellent strategy game, Castles II.

Resource management is the core of Castles II. You need to balance a host of administrative, military, and political tasks to achieve long-term success. Harvest grain, chop timber, and mine iron and gold. Build six fighting units, search for saboteurs, and launch cross-border attacks. Send diplomatic missions, merchants, and spies to your neighbors and to the Pope. Keep morale high, and scout out neighboring provinces. And don't forget castle-building: It's the only way to pacify your citizens and make them truly productive.

It looks invulnerable—but is it?

Create, save, and reuse your own castle designs, or load historical ones such as Conwy Castle or the Tower of London and see how they hold up. Battles take place in real time on an attractive VGA landscape in which fortifications, choice of terrain, and individual strategy can make the difference between victory and loss of a key province.

Each pretender in Castles II has his own mix of talents and weaknesses. Charles of Valois is arrogant and despised but an excellent general. Philip of Burgundy is a superb diplomat with little talent for anything else. Whichever character you choose to play as, you'll face personalized crises that test your character's decision-making skills. These "plots" can be turned off, but they really enhance the game's flavor.

The CD version of Castles II is identical to the floppy-based one except for a few multimedia enhancements. Players new to the game will no doubt find the added spoken tutorial helpful in getting started, and crisp spoken text replaces written dialog. (This does make for poor ambience—you're supposed to be in a castle, but your visitors all sound like they're standing next to you in a small closet.) Finally, there's a BBC documentary about English castles that looks terrible on a computer screen.

Rather than focusing on multimedia extras,

Take a video tour of famous castles, then build them into your plans for conquest.

Interplay should have concentrated on adding new administrative resources, greater plot depth, or extra diplomatic and military options, such as defensive alliances or prearranged simultaneous attacks from other pretenders to the throne.

If you already own Castles II, there's no good reason to spring for the CD version, but new players are highly encouraged to try it in either format. Castles II is a well-crafted game with four difficulty levels, great music, good visuals, and a random distribution of resources that make it fun to play more than once. Win or lose, you'll have plenty of fun for a long time, and that's the real name of the game in Castles II. (Interplay; 800-969-4263; DOS/CD for DOS, $59.95)

386SX, 2MB RAM, MS-DOS 5.0, VGA, mouse

GAME PLAY:	F² F² F² F²
GETTING STARTED:	F² F² F² F²
GRAPHICS:	F² F² F²
VALUE:	F² F² F² F²

A great simulation of medieval might, diplomacy, and castle building. The CD version adds only marginal improvements to the floppy version.

Coming soon.

Quarantine

Hell

Frontier-1st Encounters

Bureau 13

Star Crusader

We make this lovely advertisement and you drool all over it. Why do we bother?

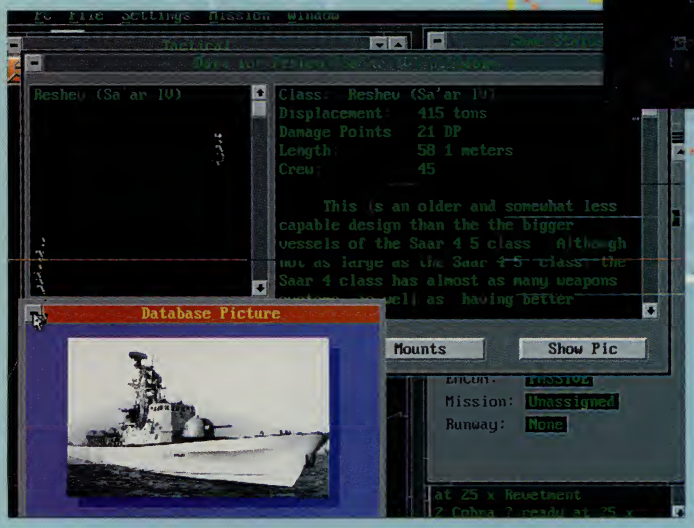
Harpoon II

By John P. Withers

Harpoon set a standard in naval-warfare simulations, and armchair admirals have been drooling oceans waiting for Harpoon II. It was worth the wait.

The latest Harpoon sports an improved interface, a database of more than 120 warfare platforms (ships, planes, and subs), NTDS symbology (what the U.S. Navy uses to represent tactical deployment), and improved artificial intelligence. The only thing missing is a lifeboat.

Missile impacts come to life in gut-wrenching color.



Not sure what your hardware looks like? Look it up in the database.

Those familiar with real multiship engagement know that the most important element is good information management. With multiple skunks (unknown ships, which might or might not be out to sink you), various courses and targets, and a flood of other critical information, things can get chaotic on the bridge of a flagship. Harpoon II reduces the chaos with a customizable windowed command interface that lets you locate and track one ship or a group, monitor message traffic, and check ship statistics at a glance. With this setup, you can monitor as much or as little as you can handle.

Command icons reside comfortably above the main map screen, making control of a single ship or multiple groups almost easy after just a few moments of playing. Harpoon vets and rank novices alike will be in full control.

Harpoon II is not graphically driven, but the graphics it does have are well done. (For example, when a ship is hit, a small window opens to let you watch the missiles wreak their damage in detail.) The live-action video isn't as clear as it might be, but it gets the point across.

The important pictures are the maps, created with a new vector graphics engine that draws accurate images of the coastline using data from the Real Defense Mapping Agency, CIA, and National Oceanic and Atmospheric Administration.

The game includes a variety of scenarios, and 360 Pacific says it plans to release new ones with data for more platforms. Harpoon II is as complete a package as an admiral could ask for. With gaming data gathered from real-world sources, an easy point-and-shoot interface, and plenty of company support, the new Harpoon will turn fresh-faced ensigns into wily skippers in no time. (360 Pacific; 800-653-1360; DOS, $69.95)

PSST!

☞ Learn the NTDS symbology. It contains almost all the information you need at a glance. ☞ Follow the scenario profiles and don't ignore mission parameters. If you're supposed to act like a merchant ship, act like a merchant ship. ☞ Read the database to learn the capabilities of your ships and create task forces with complementary abilities—combining detection and killing ability, for example. ☞ Keep missile-capable ships at the edge of their range when dealing with skunks. Send less valuable ships to make the ID and take the fire. ☞ It's OK to run in open sea with high time-compression ratios to get to the action, but slow down to real time when you spot skunks. Otherwise, missiles can get you before you have a chance to react. ☞ If a missile ship is about to go down, empty its magazine into the bogeys.

386/25, 4MB RAM, DOS 5.0, SVGA, mouse

GAME PLAY:	F² F² F² F²
GETTING STARTED:	F² F² F²
GRAPHICS:	F² F² F²
VALUE:	F² F² F² F²

Some sequels don't stack up well against their predecessors, but Harpoon II is a clear exception.

THE LOCALS WOULD LIKE TO HAVE YOU FOR LUNCH.

The good news is you survived the plane crash. The *bad* news is you're on the Isle of the Dead.

Now, as you search for survival items and a way off the island, you face a horrifying assortment of flesh-eating zombies, hideous bats, blood-thirsty wolves and other unsavory locals. Can we help it if the press is calling it "gory," "gruesome," "graphic" and "sickening?"

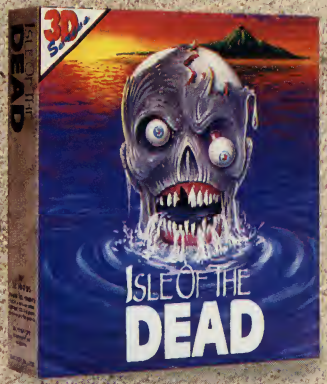
You'll traverse dense jungles, treacherous caves and explore the local village to unlock riddles that could aid your escape. And if you're lucky, you may even rehabilitate a beautiful zombie babe.

But don't forget to keep an eye out behind you. Because on the Isle of the Dead, *you're* on the menu!

See your dealer or call today!

ISLE OF THE DEAD

WARNING: This game depicts scenes of graphic violence.



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"Big, bright, oh-so-gruesome graphics . . . enough blood and gore to make even George Romero blanch. A real tongue-in-cheek, teeth-in-flesh kind of adventure."
PC Entertainment, October, '93

"Definitely not for the faint-hearted. Sampled realistic sounds add to the sickening, bloody atmosphere."
VideoGames
September '93

"Brings new meaning to the term "graphic adventure."
PC Entertainment
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Circle 82 on Reader Service Card

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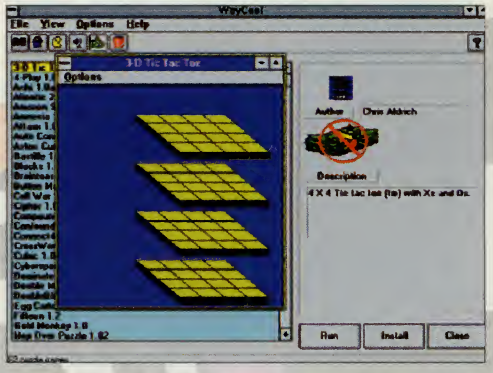
IBM 3.5" HD disks. Minimum requirements: 386 PC or 100% compatible, 4MB RAM, DOS 5.0 or greater, hard drive and VGA graphics. Sound support: Sound Blaster® and compatibles. ©1994 Merit Software.

Available at: Babbage's • Best Buy • COMP USA • Computer City • Nobody Beats The Whiz • Software Etc.

WIN
CD

Way Cool Games for Windows

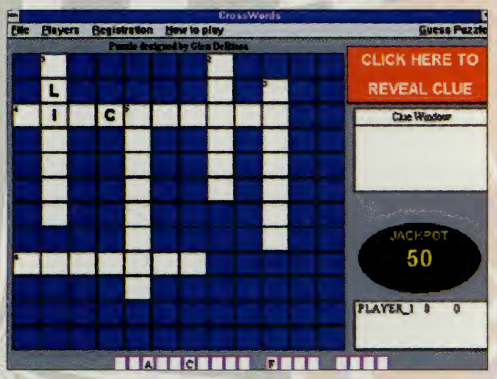
By Michael S. Lasky



3-D Tic Tac Toe is one of dozens of freeware games packed on the Way Cool disc. The set of icons in the upper-left corner lets you access games by category.

You may have noticed a flood of CD-ROM–based shareware collections on the market today. You may also have noticed that you need solid DOS and Windows skills to take full advantage of the vast majority of them.

Way Cool Games for Windows from Quantum Axcess is different. Its clever browsing device makes this unique and entertaining disc worthy of its name. Forget about using complicated compression utilities to find out what's in compressed files, forget about spending time and money online looking for the games you want, forget about the annoyance of installing and configuring a game before you can play it, and forget about having to erase the games you wind up hating.



Try before you buy by clicking on Run so you can play the game directly from the CD without installing and configuring it first.

Way Cool's built-in browser shows you a description and registration fee for each of its more than 300 games and accessories. You can either test drive the games from the CD-ROM or automatically install them to your hard disk. Even the frenetic opening menu screen is entertaining, with animated icons for each game in the selection window.

The disc divvies up its games into five categories: card games, arcade games, puzzles, a grab bag of unclassified games, and desktop ditties. These include practical jokes and other fritterware for Windows desktops such as cigarette icons that light up and burn, and even a lava-lamp simulator.

If you spend any time using online services such as America On-Line, CompuServe, or your local BBS, you've probably seen many of these games before. But some of the more than 300 choices are bound to be new to you, and it's worthwhile to have access to them without making long phone calls and tying up valuable disk space. And since Way Cool costs less than $20, even if you find only one acceptable game, you get your money's worth. (You can find Way Cool for about $10 from mail-order outfits such as MEI/Micro Center in Columbus, Ohio.)

Everything about Way Cool is way cool. Even the installation is animated. Quantum Axcess has created a useful shareware disc that looks good and has an entertaining personality even before you play the first game. (Quantum Axcess; 614-228-3903; CD for Windows, $19.95)

With this disc, you can play Aztec Curse without downloading it from an online service or BBS.

386SX, 2MB RAM, Windows 3.1, VGA, mouse

GAME PLAY:	5
GETTING STARTED:	5
GRAPHICS:	3
VALUE:	5

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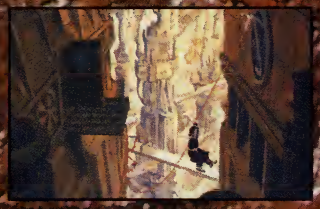

Developed By

Virgin

Available on
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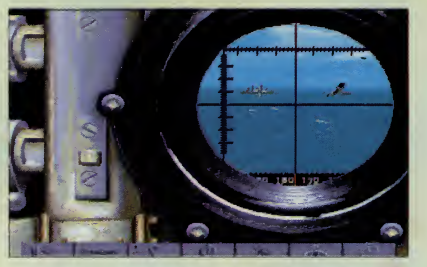
Circle 21 on Reader Service Card

Aces of the Deep



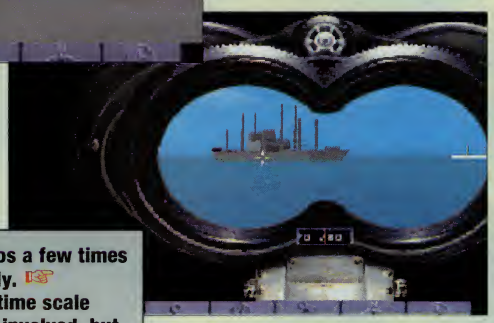
The periscope suits subsurface surveillance.

By John P. Withers and Eric Morman

Most submarine simulators rely on thick manuals and modern sub technology to provide realism. Aces of the Deep takes a different approach, using rich graphics and a simple interface to put you in control of a World War II U-boat. You get the action without having to learn oceanography or a mile-long command list.

The intro sequence sets the dark mood of the war and gives a preview of the game's high-quality 3-D animation. You then choose from various scenarios, including training, single and career missions, convoy encounters, and historical theaters. You can also set factors such as weather, crew skill, and enemy difficulty to make the game suitable for a battle-hardened veteran commander or the greenest ensign.

Down she goes.



Another easy target?

PSST!

☞ Go through the training scenarios a few times to get a feel for giving orders quickly. ☞ Patience is the key. The adjustable time scale removes most of the actual waiting involved, but a quiet and calculated strike is always a sub's greatest advantage. ☞ Keep the enemy guessing and stay out of sight. Confusing or sinking the escort ships will make the supply carriers much easier to target? with deck guns. Use torpedoes sparingly. ☞ Choose a target, quietly move into position, sink it, and disappear below the waves.

☞ 386/25, 4MB RAM, DOS 5.0, VGA

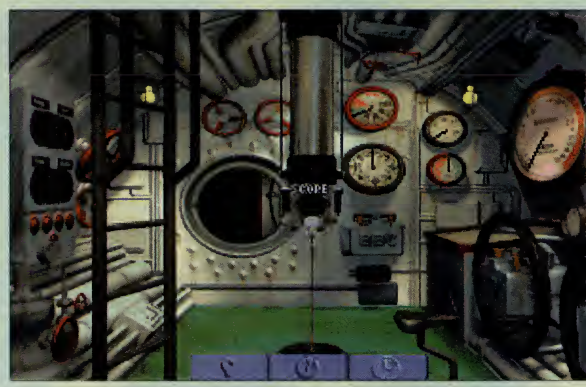
Once inside the sub, you issue commands by clicking on menu icons and control stations, or by pointing directly at well-rendered dials to adjust them. Most stations use pop-up windows, allowing you to issue orders without switching screens. You gather visual information with binoculars when you're on the surface, and by periscope when underwater. Other tactical info is represented on a simple charting system.

You target enemies with the periscope or deck guns. Most of the game's fighting takes place close to the surface and provides a fast-paced, arcade feel. The animation of the ocean waves is icing on the cake, and adds greatly to Aces' overall realism.

Aside from the rolling waves (which can induce a touch of motion sickness if you stare long enough), several other factors help make Aces one of the more realistic sub sims on the market. For starters, the subs can't just dive into the inky depths and stay there for days, because their diesel engines can be run only on the surface—where they're most vulnerable to enemy ships and the strafing of the seemingly omnipresent Royal Air Force.

Below the surface, battery power and oxygen must be maintained, cruising speed is limited, and the torpedoes are steam-driven and somewhat unreliable. However, enemy destroyers have their own disadvantages, such as semieffective depth charges and limited sonar. From start to finish, the game is true to the technology of the day.

Aces of the Deep is a game almost anyone can enjoy with a little practice. Both sub veterans and novices will appreciate the realism tempered by playability—and the fun of blowing things up the old-fashioned way, instead of using guided weapons from a mile deep. (Dynamix; 800-757-7707; DOS/CD for DOS, $69.95)



The sub's interior controls are easy to identify and use.

GAME PLAY:	ℰ² ℰ² ℰ²
GETTING STARTED:	ℰ² ℰ² ℰ² ℰ²
GRAPHICS:	ℰ² ℰ² ℰ²
VALUE:	ℰ² ℰ² ℰ²

A simple interface and an emphasis on action make Aces of the Deep worth a look by sub-sim vets and newcomers alike.

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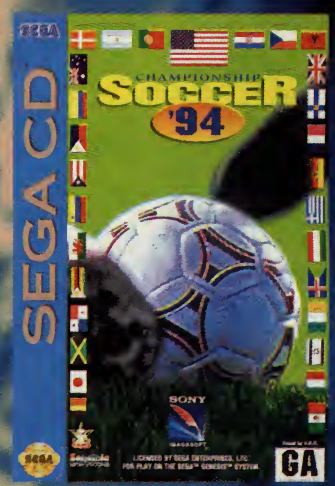

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Circle 199 on Reader Service Card

WIN

The Big One

By James Daly

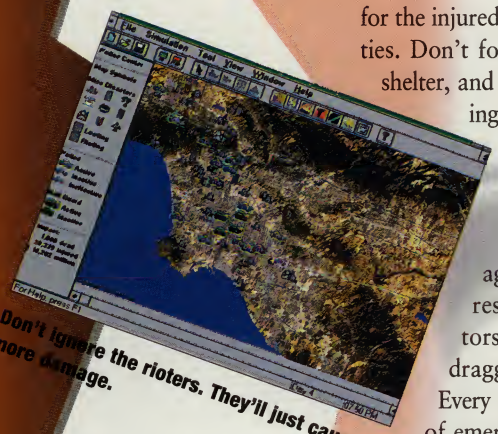
The scanner keeps you up-to-date on the city's problems.

As a native East Coaster who moved to San Francisco, I used to think earthquakes were pretty neat. They rattled dishes, spooked the dog, and were a whole lot more tolerable than ice storms in January. Then the October 1989 quake rocked the Bay Area, and I saw my hallway twist like Turkish taffy while my desk did the rumba across the floor.

Earthquakes aren't fun anymore. Not the real ones, anyway. The onscreen quakes generated by Swfte's The Big One, however, can be a blast.

Field hospitals can keep the injured alive.

The Big One is great for people who think that anyone else can handle an emergency better than those already in charge. OK, so now you're the mayor of Los Angeles, and the City of Angels has been smacked by a major temblor. You've got seven days to undertake a disaster-relief juggling act—put out fires, care for the injured, repair freeways, and restore utilities. Don't forget to provide emergency food, shelter, and water too. Oh, and keep the looting and rioting to a minimum while evacuating areas threatened by radiation or toxic smoke. Still up for the job?



Don't ignore the rioters. They'll just cause more damage.

To restore the earthquake-ravaged city, you call upon emergency resources—cops, firefighters, doctors—by clicking on their icons and dragging them to the damaged areas. Every morning you receive a fresh supply of emergency workers and equipment to allocate, but because the game reflects LA's limited emergency resources, there's no guarantee that you'll have enough to do the job. But if you do strike the right balance, the city moves toward recovery.

For the armchair politician, The Big One is a fascinating look at the complexities of handling a major disaster. It's also got an interesting historical bent: In addition to being able to generate your own quake, you can select from a handful of real shakers, including the '89 San Francisco quake.

You win by earning reelection with a 51 percent or higher approval rating—a cynical twist if there ever was one. Unfortunately, the populace isn't a very judgmental bunch, so winning is a snap. In one game, I whomped the city of Whittier with a huge quake that killed more than 1,500 people. I then goofed up my fire-department and utility-company assignments, causing a toxic cloud to spread over the San Fernando Valley and a dam to come within minutes of bursting. Nevertheless, in the end I was hailed as a savior and reelected to office. Go figure.

Developer Swfte has found a way to avoid any charges of exploitation by contributing 5 percent of its sales profits from the game to California earthquake-relief organizations.

For a sense of the chaos that follows a major tectonic shift, The Big One is the next best thing to being there. And when it comes to earthquakes, that's not a bad place to be. (Swfte; 800-237-9383; Windows, $49.95)

PSST!

☞ Clear the freeways first so that emergency trucks can get through. ☞ If looting turns into a full-scale riot, send in the National Guard. They're eager to bust heads, and they clean things up nicely. ☞ Don't forget to set up field hospitals. If injuries are not treated promptly, they can become deaths. ☞ Keep an eye on your emergency band radio, especially following aftershocks. It tells you if ugly situations are developing in one sector while you're busy in another.

386SX, 2MB RAM, Windows 3.1, VGA, mouse

GAME PLAY:	★★★★
GETTING STARTED:	★★★★
GRAPHICS:	★★★
VALUE:	★★★★

The Big One satisfies the primal urge to heroically thrash your way out of a disaster. You won't find any cutting-edge graphics here, but it proves that a good game doesn't have to rely on outer-space escapism.

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NEWS AND VIEWS

	excellent				poor	didn't read
Editor's Page						
Sex Sells	1	2	3	4	5	
E2 Mail	1	2	3	4	5	
Sharp Edge	1	2	3	4	5	
Spotlight	1	2	3	4	5	
Game On						
Making an Interactive Movie	1	2	3	4	5	
Tube Man						
Interactive Storytelling	1	2	3	4	5	
Game Over						
Reach Out and Touch Someone	1	2	3	4	5	

FEATURES

	excellent				poor	didn't read
Cybersex!	1	2	3	4	5	
Sega Champion CD	1	2	3	4	5	
Do-It-Yourself VR	1	2	3	4	5	
Playing Games at Work	1	2	3	4	5	
Multimaniac						
How I Became a PC Moviemaker, the Sequel	1	2	3	4	5	

STATE OF THE GAME

	excellent				poor	didn't read
Game News	1	2	3	4	5	
Al-Qadim: The Genie's Curse	1	2	3	4	5	
Hexx: Heresy of the Wizard	1	2	3	4	5	
Inherit the Earth	1	2	3	4	5	
Shadow of the Comet	1	2	3	4	5	
Litil Divil	1	2	3	4	5	
Goblin Quest 3	1	2	3	4	5	
Castle II: Siege & Conquest	1	2	3	4	5	
Harpoon II	1	2	3	4	5	
Way Cool Games for Windows	1	2	3	4	5	
Aces of the Deep	1	2	3	4	5	
The Big One	1	2	3	4	5	
TFX: Tactical Fighter Experiment	1	2	3	4	5	
Ultimate Domain	1	2	3	4	5	
MegaRace	1	2	3	4	5	
Raptor: Call of the Shadows	1	2	3	4	5	

TECH SHOP

	excellent				poor	didn't read
Get Great Graphics!	1	2	3	4	5	
Unlocking the Mystery of CD-ROM	1	2	3	4	5	
S.O.S.	1	2	3	4	5	

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TFX: Tactical Fighter Experiment

By Rick Raymo

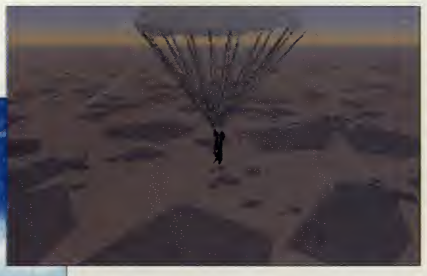
Want to fly classified jets, blast bogies, and still be considered the good guy? Keep the peace, baby. That's your job in Ocean's TFX: Tactical Fighter Experiment. You're a member of the United Nations Air Force, piloting three cutting-edge aircraft. You traverse the globe to battle forces that would undermine the UN charter. Flying from land- and carrier-based runways, pounding ground-based targets, or chasing MiG-29s, TFX falls somewhere between full simulation and arcade fight-and-flight games.

Your Commander has a mission for you. Get to it, pilot.

Of the three aircraft available to you, only the F-117A is actually seeing service. The other two, the F-22 Superstar and the EuroFighter 2000, will hit the skies in the late 1990s. That means two-thirds of this game is speculative simulation—Ocean took what is known about these future fighters and built around it.

Chasing bandits and splashing them is the name of the game.

Choose from six play modes as a member of the United Nations Air Force.



The final option: hit Esc to eject. When you're in training, you can get away with this repeatedly.

TFX gives you six modes of play, and all give you plenty of choices. The Arcade mode is simple flying with unlimited armament—it's deny-the-laws-of-physics-and-have-fun–style play. Training mode takes you through ten missions and teaches you to fly all three aircraft in a wide spectrum of combat situations. It's tough, but worth the effort. Simulator lets you fly however you like, with no rules or regulations. You choose the scenario and go for it, and can even take out hospitals and churches without penalty.

Tour of Duty lets you enroll in one of three UN squadrons (one for each fighter). Here you have to follow UN rules and regulations—no bombing preschools. Flash Points mode puts your training to work. You receive orders from the top brass, then get background info from news reports, press conferences, and UN Assembly crisis meetings. All aircraft and weaponry are chosen for you. In UN Commander, you make all the choices and use satellite imagery to select a combat arena and choose targets (including quality and quantity, time of day, weather, and aircraft). Only hard-core fighter gamers need apply.

TFX does a good job of landing between a flight sim and an arcade game. The graphics border on very good, the music is enjoyable, there are plenty of voice and sound effects, and game play is solid. But you may wonder exactly what type of gamer this title is for. True sim fans may find it limited, while arcade gamers might consider it too difficult and choice-ridden to master. (Ocean of America; 408-954-0201; CD for DOS, $49.95)

PSST!

☞ To avoid training altogether, enter your name on the Enroll screen, then hit the Control key and Enter to register the callsign. ☞ In ground missions the most important buildings are usually the biggest. ☞ In aerial combat take on enemy planes one at a time. ☞ If all else fails when you're taking on a Sam site, use your cannon. ☞ If you are asked to take out a fleet, hit the carrier first.

CHEAT

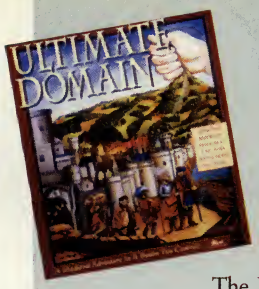
☞ Here's a "can't be shot" cheat: When flying, type "plop" while holding the right Shift key. You'll still blow up if you hit the ground or other objects.

386/33, 2MB RAM, MS-DOS 5.0, VGA

GAME PLAY:	★★
GETTING STARTED:	★★★
GRAPHICS:	★★★★
VALUE:	★★★

TFX is a game that tries to find a happy medium between arcade and flight sim, but it may not appeal to hard-core fans of either genre.

Ultimate Domain



By David Israels

Ultimate Domain challenges you to cultivate a prosperous region and arm it to the teeth with the latest technology. As captain of one of Genesia's 64 undeveloped lands, you begin the game with four inhabitants, a pouch of gold, and two computer opponents. You win by either beating the bejesus out of your rivals or exploring Genesia to find seven lost jewels. (Don't ask how they got lost—it doesn't matter.) The game bills itself as a combination of sophisticated simulation, role-playing adventure, and warmongering fun, but it's actually a robust resource-management game combined with a lighthearted combat system, which has only the most peripheral adventure element.

Hear them shriek. One balloon plus a bomb equals lots of dead enemies in war-torn Genesia.

The key to this turn-based game is to manage scarce resources and prepare for war. You spend a lot of time shifting workers among eight trades, such as carpentry, farming and invention, while making sure their morale stays high. Don't neglect R&D: There are more than 70 different things to discover.

A turn lasts one season, each of which presents its own problems and opportunities. For example, harsh Genesian winters mean almost no one works outside, while in the summer the skies crackle with lightning.

Combat is a deliciously silly sort of affair that has military units grunting when hit. I quickly prepared for war, pushing my inventors to develop the cannon as rapidly as possible.

The VGA graphics are acceptable, though the Super VGA pizzazz of SimCity 2000 has me spoiled. The chief visual fun comes from watching your minions toiling furiously and seeing the fruits of their labors transformed into all kinds of structures. You can enter some of these with a right-mouse-button click to do things like levy taxes or draft recruits.

Unfortunately, the delightful elements are marred by awkward game play. Since each turn is timed, you end up rushing frantically from task to task as you attempt to beat the clock in the game's later stages.

The playing field also offers unwelcome challenges. Scrolling in a close-up view is annoyingly slow. And finding military units in a forest or figuring out what's behind a building is a chore because you can't rotate the field. But the game manual is Ultimate Domain's worst element. Written in Dick-and-Jane English, its meager contents are poorly organized and uninformative.

Enter the temple and pay your respects. Presto: Your people's morale rises.

Though Ultimate Domain has tried to mix the look of Populous, the game play of Civilization, and the whimsy of Warlords II, its less than sterling execution leaves players still searching for the ultimate strategy game. Maybe the upcoming CD-ROM version will be more of a fix than a port. (The Software Toolworks; 800-234-3088; DOS, $39.95)

GAME PLAY:	F² F² F²
GETTING STARTED:	F² F² F²
GRAPHICS:	F² F²
VALUE:	F² F² F²

The concept is good, but the execution is only average, and problems with the graphics interfere with game play.

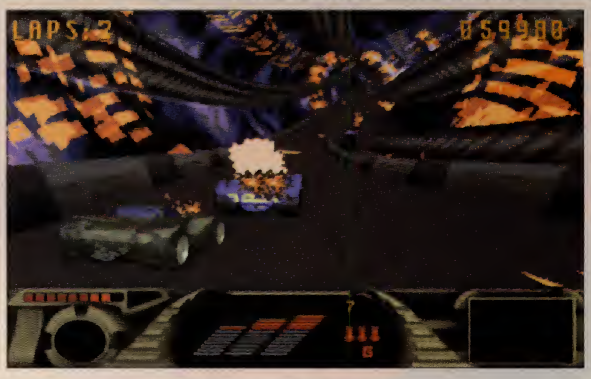
☞ When changing screens you may lose the cursor. Similar problems have been reported on America On-Line, but at press time, The Software Toolworks said it had been unable to reproduce the problem.

PSST! ☞ To attract additional settlers at the game's start, make sure you have at least two farmers, one well, a morale of five, and empty huts. ☞ Build a warehouse and a drill before any other structures. To get more stone, put the drill on a rock or a plain with rocks on it. ☞ If you want to win with the fist, gear your resources toward war and get your inventors to discover the cannon. ☞ In the winter, put all your inhabitants to the task of inventing. Just before the timer runs out, switch them back to outside work to prepare for the coming spring.

386, 2MB RAM, MS-DOS 5.0, VGA, mouse

MegaRace

By Rusel DeMaria



It's him or you. It'd better be him.

Welcome to MegaRace, a virtual game show in a twisted future in which the object is to drive on twisty tracks and leave your enemy in a heap of metal slag. As smarmy game-show host Lance Boyle puts it, "It's a whole lot better than real, baby; it's Virtual Television, reality's worst nightmare!"

MegaRace is delightfully schizophrenic. On the one hand, you have the high-speed monologues of Boyle, a sort of Don Knotts on speed. Throughout the game, you visit Boyle at Virtual World Broadcast Television headquarters. And he's invariably cheerful, witty, chummy, and really quite funny.

Pick your vehicular weapon . . .

Power up by driving over strange symbols . . .

then pound the competition.

When you're finished getting acquainted with Boyle, you choose a car. You start with only two choices, but winning a few races nets you six more. Then it's on to the track.

First, admire the scenery. The developer has done a marvelous job of creating more than a dozen 3-D–rendered racetracks—each with a unique look. You'll also appreciate the impressive visuals of the Blade Runner–esque world, of MegaRace.

Then there's the game itself. It's quite simple, really—drive, shoot, and play high-speed bumper cars. Your opponents appear ahead of you one at a time, and you must either outdrive or outshoot a set number of them to win the race. There are three basic ways to beat an enemy driver—shoot him, bash him into the track walls, or get far ahead, in which case he conveniently blows up.

The racetracks are littered with strange markings, and driving precisely over one effects your vehicle or your score. For instance, arrows in the road speed you up for a short time. Other markings increase your car's energy reserves (if you don't have energy, you don't get guns or missiles). Still other markings increase your score and provide temporary protection from your enemies. There are 18 markings in all, and success depends on learning their position and effect.

In the end, I wished the cars were more diverse. Also, though the races get progressively harder, the experience begins to feel repetitive. First, you have to drive a track a few times to learn it, invariably losing during these trial runs. Then, once you figure out where the special markings are, you have to try to hit them just right. Eventually, you beat the track and progress to the next one. If your score is high enough, you may even earn a prize. (Don't get too excited. Prizes are pretty bogus, but, like all the intermediate scenes, very funny.)

MegaRace is fun, but for my money the cinematics and humor outshine the racing, which provides some arcade fun but ultimately left me thinking it could have been better. (The Software Toolworks; 800-234-3088; CD for DOS, $69.95)

386/33, 2MB RAM, MS-DOS 5.0, VGA/MCGA, sound card

GAME PLAY:	3
GETTING STARTED:	3
GRAPHICS:	4
VALUE:	4

A game that combines great graphics, great imagination, and excellent acting and scripting with fairly ordinary game play.

Raptor: Call of the Shadows

By Paul Hyman

From the moment you launch Raptor: Call of the Shadows, you know you're in for a treat. Your PC's speakers roar with the sound of jet engines as the screen explodes into a firefight between your jet and the baddie's. Your machine guns belch fire as you race over a city landscape and watch your foe go down in flames. And that's just the intro—the game hasn't even begun yet.

Raptor is the latest release from Apogee Software, the shareware publishing king that brought you Wolfenstein 3-D. This time around you get the first 9 levels of Raptor to try before you buy. If the game knocks your socks off, call Apogee and shell out for the 18 additional levels—and you will.

This is one mean fighting machine; ain't no beverages or snacks served on this flight.

Before you set out on your first mission, you have to do a little preparation. Choose an ID picture and call sign for yourself, then head over to Harrold's Death Emporium, where Harrold himself sells you the weapons and shields you need to stay alive. You probably can afford only some energy modules now, but later, when you've earned enough points from successful missions, you can upgrade to a megabomb, some phase shields, or maybe even a plasma cannon.

☞ Sure, you have unlimited ammo, but if you pull your finger off the trigger every now and again, your shields recharge. ☞ The shields you start out with may not be enough to get you past the Boss. Buy the phase shield when you can afford it. ☞ Don't play kamikaze by running headlong into other ships. The damage isn't worth it. ☞ On the level control panel, click on the toggle switch at the bottom center of the screen until it turns black. Click on the left and right buttons to light the red lights. Choose Auto Pilot. Look out for cows on level 8.

386, 2MB RAM, MS-DOS 5.0, VGA

Time to hit the skies for your training mission. When game play begins, there's an immediate sense of déjà vu. As you fly your fighter along the bottom of the screen and enemy planes attack from the top, you might think you're in for another Zaxxon clone or a River Raid knockoff. Hold your horses: This may look like any of a dozen other vertical-scrolling shoot-outs, but you ain't seen nothing yet. In just the training mission, you're up against zig-zagging bombers, underground cannons, a weaving chopper, and, eventually, the Boss Plane. And things will get worse, much worse.

The trick is to shoot everything in sight: not only the attacking planes but also the bridges, the buildings, and the underground armaments. The more you destroy, the more points you earn to buy weapons for the next level. Trouble is, you never seem to have enough dough for any of the superweapons because you spend it all buying the all-important shields. So even sharpshooters will find these missions to be their worst nightmare. And I mean that as a compliment.

If Raptor has a shortcoming, it's that the unoriginal game format may turn off gaming veterans looking for a new thrill. On the other hand, the game's velocity, graphical detail, and mind-blowing sound effects make Raptor a mission worth flying. Give it a shot—the cost of the trip is pocket change. (Apogee Software; 800-426-3123; DOS; Levels 1-9, free; complete game, $34.95)

GAME PLAY:	²² ²² ²² ²²
GETTING STARTED:	²² ²² ²² ²² ²²
GRAPHICS:	²² ²² ²²
VALUE:	²² ²² ²² ²²

This is a shoot-'em-up, plain and simple. If you like trying to hit anything that moves (or doesn't), this is one of the best available.

By Christine Grech

Get Great Graphics

You know what you want: more colors, more speed, and just plain more to look at. In short, you want better-looking graphics for your games and multimedia titles. Finding it is another story.

Drop into a computer store or check out the ads, and you'll see video boards ranging in price from around $200 to close to $1,000. They all promise to satisfy your graphical dreams, so how do you know whether to go for the bargain or invest in a top-of-the-line model?

It all depends on how far you're willing to go in pursuit of the perfect picture. Not surprisingly, the more you pay, the more you get. For around $200 you can get a basic Super VGA video card with no special performance enhancements.

For faster graphics performance (especially in Windows) and support for more colors and higher resolutions, you'll need a more expensive Windows accelerator board with dedicated video memory and graphics processors. To provide even more capabilities, many boards use speedier VRAM instead of standard DRAM, as well as newly affordable 64-bit graphics chips. (For more details on what to look for in a video card, see "Graphically Speaking," July 1994, page 114.)

Knowing about boards isn't enough. You need some information about where you intend to put it. For starters, you need to know what kind of bus your PC has—ISA, EISA, MCA, VL-Bus, or PCI—because your new video board must have the same kind. You can identify your PC's bus by looking at the motherboard, or simply checking your manual. The good news is that most video cards are available in several different bus configurations.

You also need to know what resolutions and refresh rates your monitor can handle. A video card that can display a million colors at ultra-high resolutions is a waste of money if your monitor can't keep up with it. Refresh rates—how often the screen is redrawn—become critical at resolutions above 800 by 600. Displaying high resolutions at a refresh rate of less than 72Hz will result in noticeable flicker—and big headaches.

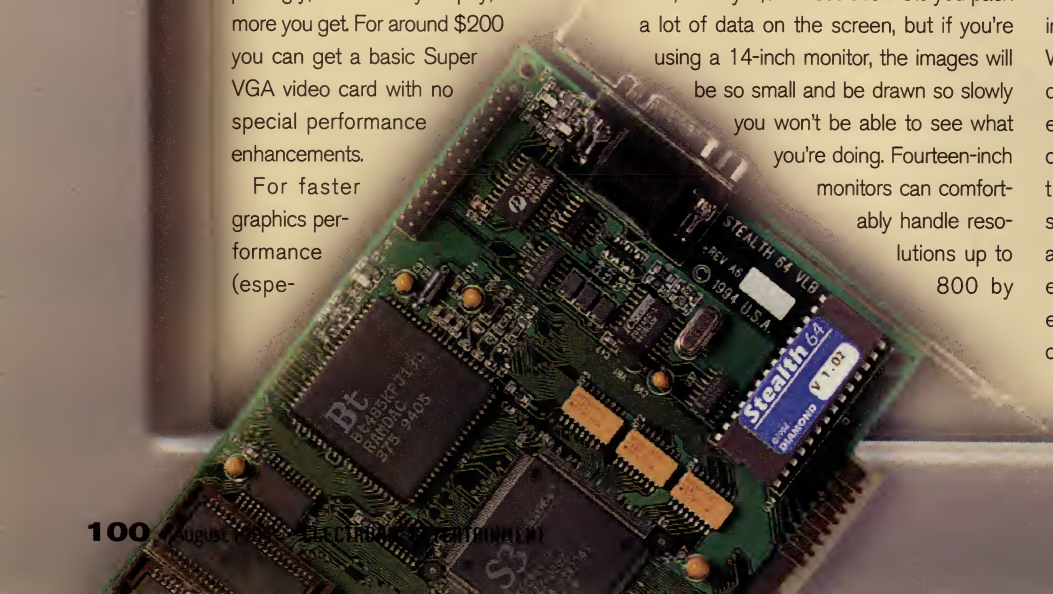
Size matters, too. Running Windows at 1,280-by-1,024 resolution lets you pack a lot of data on the screen, but if you're using a 14-inch monitor, the images will be so small and be drawn so slowly you won't be able to see what you're doing. Fourteen-inch monitors can comfortably handle resolutions up to 800 by 600, 17-inch displays are great at 1,024 by 768, and 20- or 21-inch monitors can go up to and beyond 1,280 by 1,024.

Finally, software utilities are almost as important as the hardware. Virtual desktop programs, for example, let you run your 14-inch monitor at 640-by-480 resolution, but make it seem as if the screen is a window on a much larger working area. You'll still see 640 by 480 pixels on the screen, but when you get to the edge of the screen, it will scroll over to show you more. Zoom utilities let you magnify a portion of your screen with a quick keystroke. Some cards also include utilities to change screen resolutions without having to mess with Windows' Setup routine.

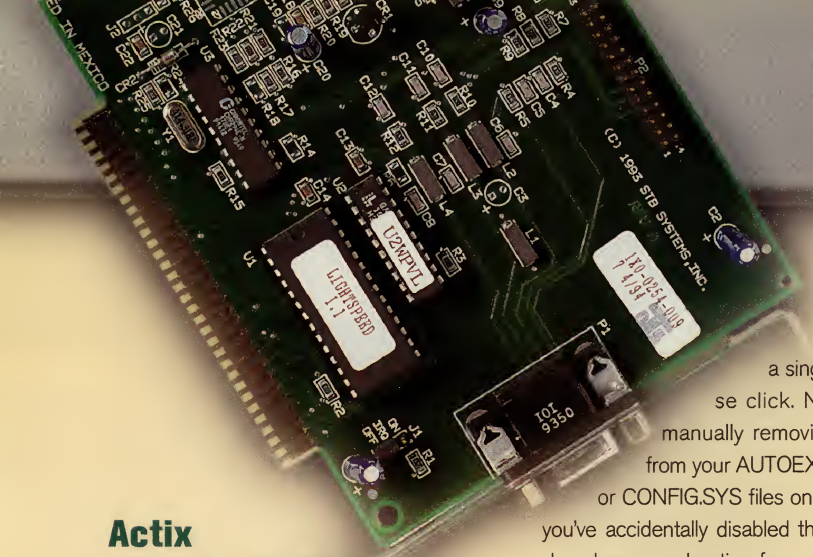
If all this seems complicated, it is. That's why we've narrowed the field for you. An SVGA card might do the job right now, but your best bet is a Windows accelerator board that will give you better performance, more colors, and higher resolutions to grow into. And you don't have to spend a bundle to get all of this. We've found a variety of well-equipped Windows accelerators that do the job for less than $400.

Our top five picks—Actix's GraphicsEngine 32iVL, Diamond's Stealth 64, Hercules' Dynamite Power VL, Orchid's Kelvin 64, and STB's LightSpeed VL—each contain 2MB of RAM and can display 65,000 colors at a non-interlaced resolution of 1,024 by 768 with a 72Hz refresh rate.

Because these boards generally don't improve DOS graphics, and because many Windows games and multimedia titles don't take advantage of the boards' acceleration technologies, the chief advantage comes in additional colors, higher resolutions, and faster screen redraws. We selected only boards that deliver in those areas, and we judged them on features, ease of installation, and support. We tested the VL-Bus versions, but most of the cards are available in other configurations.



PHOTOGRAPHS BY DAN CLARK



Actix GraphicsEngine 32iVL

Looks can be deceiving. The GraphicsEngine 32iVL may seem spartan, but its simple, thoughtful design makes it powerful and easy to use.

Granted, you can't add more memory to the standard 2MB of DRAM, and the board doesn't come packed in an antistatic case. Its skimpy manual is confusing at times because it covers all three boards in Actix Systems' GraphicsEngine series, not just the 32iVL.

But the GraphicsEngine 32iVL also proves that less can be more. For example, it requires just one disk to install both its DOS and Windows drivers and software utilities. And, unlike most video boards, installation is a single-step process. The DOS-based installation program covers Windows drivers, the GraphicsEngine utilities, and other software drivers. When you select the Windows drivers option, the installation program automatically brings you into Windows where it creates an Actix program group. You can then choose the resolution and refresh rate you want.

Ironically, the GraphicsEngine's most thoughtful feature is the uninstaller. How many times have you installed software or hardware that didn't work? Actix's utility lets you remove all traces of the board's software from your system with a single mouse click. No more manually removing lines from your AUTOEXEC.BAT or CONFIG.SYS files only to find you've accidentally disabled the sound card, and no more hunting for cryptic files to delete.

You won't find any extra utilities, but this is one of the easiest cards to install and remove. And at less than $300, it's easy on the wallet, too. (Actix Systems; 408-986-1625)

Price: $299
Bus: VL-Bus
Warranty: 2 years
Technical Support: Toll call, BBS, CompuServe

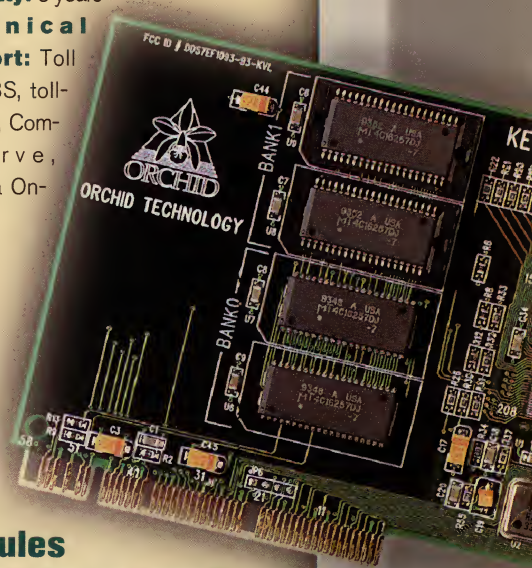
Diamond Stealth 64

This board is the latest addition to Diamond Computer Systems' line of Stealth VRAM Windows accelerators, and it's quite an upgrade over the previous version. As its name implies, the new Stealth 64 uses a 64-bit graphics controller (Diamond also sells a less expensive 32-bit version). The Stealth 64 comes with 2MB of memory, or you can opt for the 4MB version to let the card display 65,000 colors at a non-interlaced resolution of 1,280 by 1,024. The 2MB version we looked at supports 256 colors at a resolution of 1,280 by 1,024.

In addition to its display options, Diamond's InControl Tools collection of Windows utilities uses a single control panel to set screen resolution, zoom level, power management, and the shape and color of your cursor. Despite all these extra toys, installing the Stealth 64 is straightforward. It comes with two disks, one for DOS and one for Windows. Unfortunately, you must complete the process in two steps. Diamond backs the Stealth with a generous 5-year warranty.

At almost $400, the Stealth 64 just makes it in under our spending cap. But its 64-bit processor, expandability, 5-year warranty, and comprehensive utilities make it a board that will do the job for the long term. (Diamond Computer Systems; 408-736-2000)

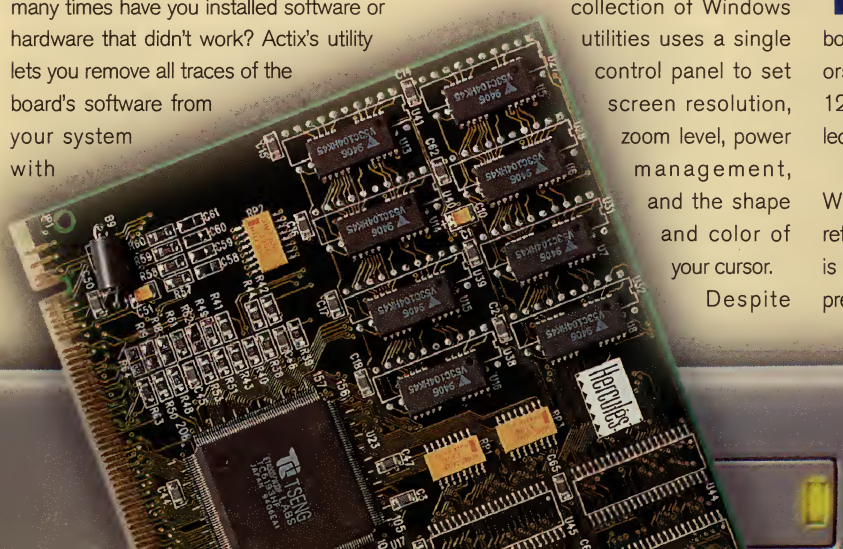
Price: $399
Bus: VL-Bus, PCI
Warranty: 5 years
Technical Support: Toll call, BBS, toll-free fax, CompuServe, America On-Line



Hercules Dynamite Power VL

The $340 Dynamite Power is serious about video. With 2MB DRAM, the board supports true color (16.7 million colors) at ultra-high refresh rates of up to 120Hz. It even comes with a powerful collection of graphics utilities.

Hercules' Picture Window utility controls Windows display settings, while its refresh-rate meter tells you if your monitor is really refreshing itself fast enough to prevent eyestrain.



The Adjust utility, meanwhile, frees you from fiddling with monitor controls to adjust the display. Just use your mouse to set the position of an onscreen representation of a monitor and watch your own screen move.

If you want it all, but the Diamond Stealth 64 is a bit too rich for your blood, consider Hercules Dynamite Power. You'll forgo the latest technology, but you'll get a handy collection of utilities and enviable refresh rates—and at a 15 percent savings. If even the Dynamite Power is too pricey, Hercules' similar Dynamite Pro cuts the price to less than $300 while maintaining the premium version's ultra-high refresh rates, but it supports only 65,000 colors at 800-by-600 non-interlaced resolution. (Hercules; 800-532-0600)

Price: $339
Bus: VL-Bus, PCI
Warranty: 2 years
Technical Support: Toll call, BBS, CompuServe

Orchid Technology Kelvin 64

At $250, Orchid's Kelvin 64 is the cheapest card in the bunch, but it still includes a 64-bit graphics controller and a bundle of utilities. Orchid also offers a 1MB version of this DRAM card that you can upgrade to 2MB.

The one-disk installation program automatically takes you into Windows where it creates a Setup icon in the Windows Control Panel. As with most video cards, its DOS installation routine uses a menu to let you pick the drivers and utilities you want to install. But Orchid throws in an extra option that's a welcome sight for anyone having installation problems—the Technical Support menu item lists Orchid's phone number, BBS number, and appropriate modem settings, and even the CompuServe commands to get you to the company's support forum.

Orchid ships the Kelvin 64 with virtual desktop and zoom utilities, and, like Hercules, provides a display-centering utility.

Given its 64-bit processor, solid group of utilities, and great price, bargain hunters should track down the Kelvin 64. (Orchid Technology; 800-767-2443)

Price: $250
Bus: VL-Bus, ISA, PCI
Warranty: 4 years
Technical Support: Toll call, BBS, CompuServe

Green Machines

So-called "green" hardware is one of the latest trends in computing. These environmentally friendly units automatically power down to save energy when not in use. If you have a green PC and monitor, you should look for a board that supports the Energy Star standard or the VESA Display Power Management Signaling standard (DPMS). Such boards often come with software utilities and screen savers that let you set how long the monitor waits before shutting off the power. All the boards we reviewed support DPMS.

—Christine Grech

STB LightSpeed VL

The name of the game for the LightSpeed VL is support. STB Systems backs its DRAM video board with a lifetime warranty and is the only video card maker that offers a toll-free technical support line and fax.

Installing the LightSpeed VL means hacking through DOS menus to select the options you want, but STB eases things by letting you install everything in a single step. Press the space bar to select all of the drivers and utilities you need.

The LightSpeed VL is the second-most inexpensive card of the bunch at $289, and as such lacks some key features. It doesn't come with any graphics utilites, just the requisite installation software. Also on the downside, STB doesn't pack the board in an anti-static case to protect it from damage.

If you need the security blanket of a lifetime warranty, the LightSpeed VL may be the board for you. If you can live without the extra support, you can get a better combination of features for less with the Orchid Kelvin. (STB Systems; 214-234-8750)

Price: $289
Bus: VL-Bus, PCI
Warranty: Lifetime
Technical Support: Toll-free call, BBS, CompuServe

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Circle 135 on Reader Service Card

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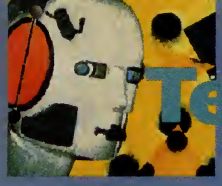
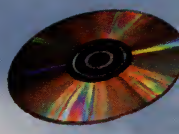


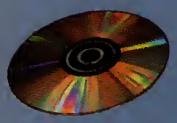
By Christopher Lindquist



Unlocking the Mystery of CD-ROM

The silver discs have landed. The invasion has begun. A growing number of innovative multimedia titles and hot games are being released only on CD-ROM. So if you don't have a CD-ROM drive for your PC or gaming system, you simply won't be able to play.

But what's really going on inside that shiny silver disc? How do CD-ROMs deliver all that dazzling sound and video? And why will titles written for one gaming system not work in the others when audio CDs will play in a PC, CD-i, or even a 3DO machine? As with many things in life, there's more to a CD-ROM disc than you can see at a glance. Take a closer look:



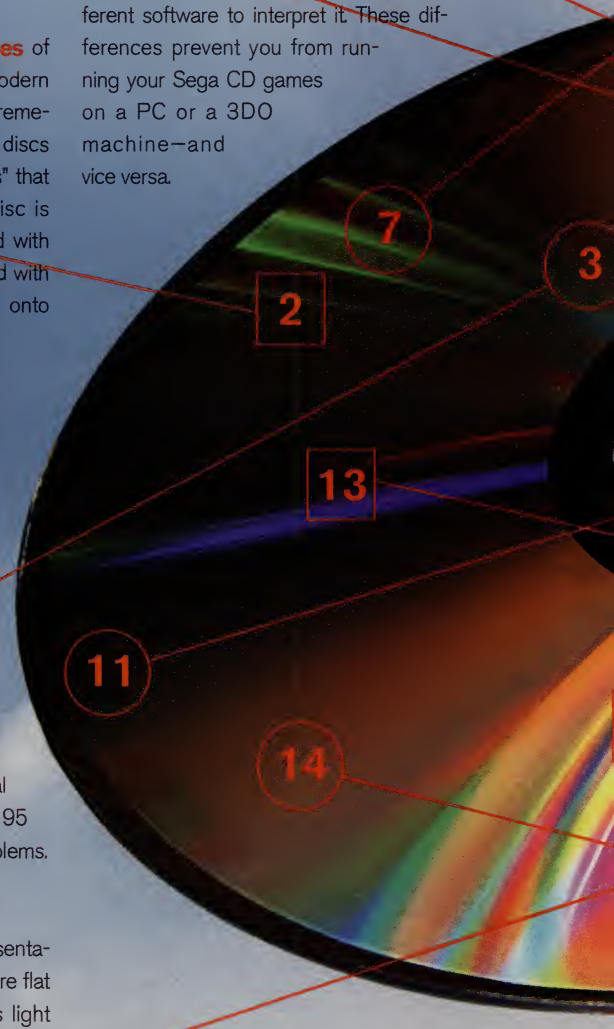
CD-ROMs are tough, but they're not indestructible. Some CD-ROM drives use plastic caddies to protect the discs from scratches and fingerprints, while others use more convenient (if less protective) trays. An audio CD can take quite a bit of abuse and still keep playing because our ears can't hear the split-second drop outs and distortions that scratches can create. But a CD-ROM has to transfer its data to the computer exactly as written, or the program won't work properly.

CD-ROMs are high-tech sandwiches of polycarbonate, aluminum, and lacquer. Modern CD-ROM reproduction machines mold extremely high-quality polycarbonate beads into discs that already contain all the "pits and lands" that define its digital information. Once a disc is molded, the pitted (bottom) side is coated with an ultra-thin layer of aluminum, then sealed with lacquer. Finally, the label is silk-screened onto the top surface.

Defects will kill a CD-ROM, and even miniscule flaws can make a disc unusable. That's why disc pressers scan newly minted CD-ROMs for physical defects such as pinholes, warpage, and stresses in the plastic—anything that could cause a CD-ROM drive's laser to misread the information. After the physical-fitness tests, the discs are tested electronically to verify that every bit of data is exactly where it belongs. Despite all the potential problems, the CD-ROM industry presses 95 percent of its discs without noticeable problems.

Pits and lands are the physical representation of data on a CD-ROM platter. Lands are flat spots on the disc that reflect the laser's light directly back to a detector. Pits are tiny bumps that disperse the light. (Just how small are these pits? Well, if a pit were the size of a grain of rice, the disc would have to be some 400 yards in diameter to hold them all.) As the disc spins by the drive's detector, the reflected laser light creates a pattern of pulses that the computer reads as binary data. The machine converts this data into video- and sound-filled games and multimedia programs.

A CD-ROM isn't a CD-ROM to a system that doesn't know how to read it. While electronic systems from the PC to the Sega CD all use the same physical CD-ROM discs, each system stores the data in a different way and uses different software to interpret it. These differences prevent you from running your Sega CD games on a PC or a 3DO machine—and vice versa.



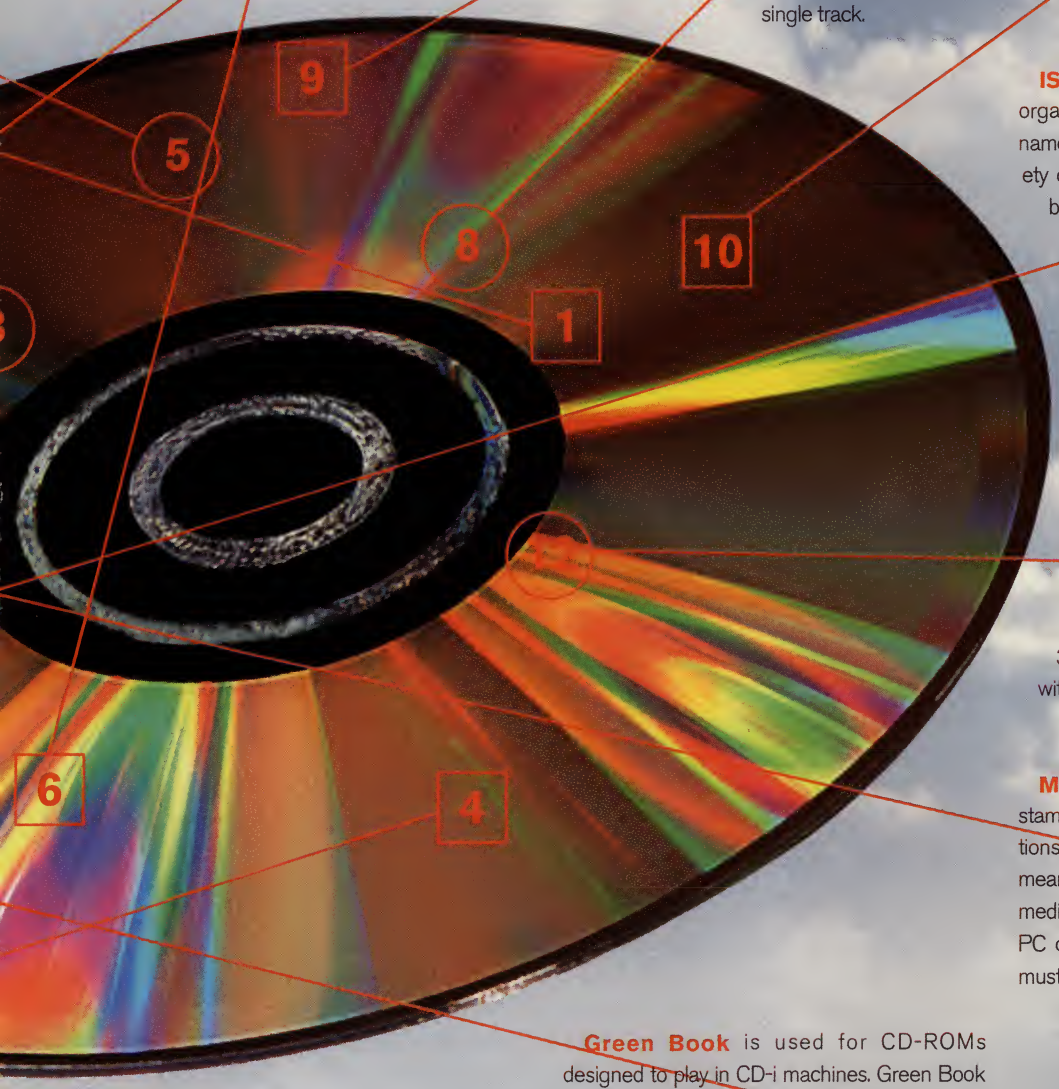
Large storage and low cost are the primary benefits of CD-ROMs compared to floppies. A CD-ROM can hold 600MB of data, more than can fit on 400 floppies, and allows for faster access of the data. Compared to a hard disk, CD-ROMs are dozens of times cheaper per megabyte of storage, and they're easily portable. But CD-ROM drives access and transfer data much more slowly than a modern hard disk, which can mean annoying delays in your multimedia programs. The latest double-, triple-, and even quad-speed CD-ROM drives are narrowing the gap, but CD-ROMs are unlikely to ever match the performance of magnetic hard drives.

Red Book was the first commercial standard for audio compact discs. It was designed by Philips and Sony to squeeze 74 minutes of stereo music on to a disc. All audio CDs, from classical to rap, use the Red Book standard. Many computers and game systems can use special software to play Red Book audio CDs.

Yellow Book is an extension of Red Book that describes a way to put computer data and compressed audio and images onto a disc. It also improves error correction, which is vital to computer applications. But discs encoded with the Yellow Book standard occasionally suffer from synchronization problems because the audio and video aren't combined on a single track.

Orange Book defines a data standard for recordable CD-ROMs, including both magneto-optical discs (which can be erased and rerecorded) or CD-R discs (which record data permanently). Drives that write to CDs are still too expensive for most consumers, but prices are dropping rapidly. Variations such as Sony's MiniDisc may soon deliver rewritable optical storage at an affordable price.

CD-ROM/XA (Extended Architecture) is a relatively new standard that overcomes Yellow Book's inability to mix or interleave audio, video, and other data on a single track. Unfortunately, CD-ROM/XA requires special hardware that has yet to find its way into many computers, so most CD-ROM titles don't support the standard.



ISO 9660 is a standard developers use for organizing such things as directories and file names so that they can be accessed by a variety of computers. ISO 9660 data can be read by any computer that supports it, including both Macintoshes and PCs. That doesn't necessarily mean the computer can use the information. But ISO 9660 helps programmers create hybrid discs that play on both PCs and Macs.

Photo CD is Kodak's technique for storing digitized photographs on a CD-ROM. Shutterbugs can have their pictures developed and put on a Photo CD disc, then view the images using a Kodak Photo CD player, CD-i machine, 3DO multiplayer, or a Mac or PC equipped with Photo CD software.

MPC and MPC2 are labels often found stamped on PC CD-ROM discs. These certifications by the Multimedia PC Marketing Council mean that the disc will run on any PC or multimedia upgrade kit that also bears the seal. For a PC or upgrade kit to receive the MPC seal, it must meet minimum hardware requirements.

Green Book is used for CD-ROMs designed to play in CD-i machines. Green Book eliminates Yellow Book's synchronization problems by interleaving the audio and video information on a single track.

PHOTOGRAPHS BY WEINBERG AND CLARK

TechShop S.O.S.

Upgrade or trade up, add multimedia to your laptop, and hear some sound card secrets.

Now That's Family Computing

I have a 33MHz 386 PC that's a little more than two years old. It covers the basics (it has a 200MB hard drive, 8MB of RAM, and a wave-table synthesis sound card), but I want to expand my horizons by going online and checking out multimedia games and titles on CD-ROM. That means I need to add another COM port, a modem, and a CD-ROM drive to get my system up to speed.

Question is, do I spend the money on the upgrades (I figure it'll cost around $500), or am I better off unloading my PC on my parents for a fair price (whatever that is) and investing in a new system?

Ed Cardiel
Millbrae, California

That's not a bad system you have. It's just getting a little long in the tooth. It will have to work pretty hard to run some of today's titles, even if you add a CD-ROM drive. I'd sell off your 386 and buy at least a 33MHz 486DX. That processor will have enough zip to run just about any program you'll want to try, and it should still be plenty usable for the next generation of titles.

You can get a machine with the necessary horsepower and all the multimedia toys (like a sound card and CD-ROM drive, and maybe even a modem) for around $2,000 from a variety of retail and mail-order shops.

How much should you charge your parents for your current system? That depends. How much do you like your folks? And how much do they know about computers?

Seriously, if you sell it to them for $500 or so, no one should feel too bad about the deal. I'd pull the wave-table sound card and 4MB of memory to put in your new system. The 'rents probably wouldn't appreciate them anyhow.

Multimedia on the Run

I just bought a great notebook computer: a 66MHz 486 PC with 8MB of RAM and a 200MB hard drive. It's ideal for work, but it falls a little short for multimedia (the screen is black and white, for instance). What do I need to do to make it multimedia-ready?

Bea Donovan
Annapolis, Maryland

Hmmm. That's quite a little laptop. All it lacks to make it a portable multimedia powerhouse is about $1,000 worth of extra parts. Oh, and it will probably gain about 30 pounds by the time you're done. So, while you can get multimedia for your portable, you'll have to sacrifice the portability.

To run the latest games and titles you'll need a sound card, a CD-ROM drive, and a color monitor. The sound can come from a PCMCIA card if your laptop has a PCMCIA slot (check the manual) or an external sound device that attaches to your parallel port, such as the PortAble Sound Plus from DSP Solutions.

Your best bet is probably a PCMCIA sound card that supports the Sound Blaster standard because these cards are smaller and tend to work better with both DOS and Windows multimedia titles. Just make sure you can return the card if it doesn't work with your system. PCMCIA standard cards are notorious for being nonstandard.

On the CD-ROM drive front, you'll need to get an external model, and you'll probably want one that's as portable as your notebook. NEC's 3Xp is a triple-speed drive that also works as a portable audio CD player. NEC even sells an Enhanced Parallel Port Interface Kit for attaching the drive to your laptop (other manufacturers have similar products). If you're lucky enough to have bought a machine with a SCSI port, you can attach almost any external CD-ROM drive to your system, too.

But all that sound and CD-ROM won't do you much good if you're forced to watch the graphics on a dull, gray LCD screen. To experience multimedia in all its glory, get yourself a color VGA monitor (or Super VGA, if your laptop supports it). Be warned that the video systems in some laptops remain at the 1988 level, though, and you may not be as happy with what you see as you would be with a full-blown desktop system.

Buy the Best Blaster

What's the difference between the Sound Blaster 16 and the Sound Blaster Pro? And what's the ASP? If I buy a Sound Blaster 16, should I also buy the ASP?

Boom
America On-Line

The difference? Well, the Pro came out first and is cheaper than the Sound Blaster 16. But in simplest terms, the SB16 sounds better than the Pro.

That's because the SB16 can play back sound at 16 bits of "resolution," while the Pro plays at only 8-bit resolution. That means the SB16 uses twice as many bits to store information about a sampled sound, delivering significantly better quality. Of course, it also requires an equal increase in the amount of disk space.

In addition, the Pro samples sounds in stereo at up to 22kHz, while the SB16 can sample music at up to 44kHz, the same sampling rate used by audio CDs. The higher rate means the SB16 can more accurately model a sound wave to produce potentially more realistic sound.

That doesn't mean it always *will* sound bet-

ILLUSTRATION BY DAVID POVILAITIS

ter. Many games use the 8-bit Sound Blaster standard, which the Pro also supports. Playing those titles through a SB16 won't improve the sound at all. Heck, it may even make things sound *worse*, since the SB16's extra resolution can dig up noise the Pro would never find. It's like when an audio CD reveals the hiss of the original recording, long hidden by the scratches on your old LP.

On the other hand, if a game uses only the FM-synthesis part of the card, you won't hear any difference at all. Both cards use the same Yamaha FM-synthesis chip, the OPL-3. But the SB16 is certainly capable of sounding much better than the Pro, if your games take advantage of it.

The SB16 has other advantages too. You can upgrade it with a Wave Blaster daughter board for wave-table synthesis. Or add Creative's Advanced Signal Processor (formerly known as the ASP until Creative found itself staring down the wrong end of a threatened lawsuit from a computer company named ASP). Creative's ASP is a digital signal processor that lets the company add features to the SB16 by sending new software to the card without a hardware upgrade. Bundled software that takes advantage of Creative's ASP includes QSound 3-D audio, Text Assist text-to-speech, and Voice Assist voice recognition. But since most titles don't yet take advantage of Creative's ASP, you might want to wait before you shell out the bucks for that particular upgrade.

Name That Tune

I have various games that support the Roland MT-32 sound board, but I have looked everywhere and cannot find it for sale. Is the board still sold? And is it Sound Blaster-compatible? Also, how does it compare with the Sound Blaster and wave-table cards in sound quality and features? I have seen other Roland cards advertised, and I wonder how those cards stack up, too.

Joel Bruns
Slidell, Louisiana

Roland is really good at making sweet-sounding synthesizers and PC add-in boards (and really bad at coming up with model names that don't sound like *Star Wars* 'droids), but game players generally have better options these days.

The MT-32 never was a PC add-in board. It was a an external MIDI sound module that could be attached to a keyboard or computer that Roland released in 1987. (Shortly after its release) Roland boiled the MT-32 down to a PC add-in board called the LA SoundCard or LAPC-1. It was one of the first standards for high-quality PC sound that game makers could write to.

So games that say they support the MT-32 are really saying that they will work with any sound card that can emulate the MT-32.

But MT-32 support is becoming something of a nonissue for PC games, thanks to the arrival of General MIDI. In most recent cards, such as the Roland Audio Production card (RAP-10), even Roland moved away from MT-32 emulation in favor of General MIDI. And most game companies are starting to support General MIDI too.

Roland helped pioneer synthesizer technology, and its cards have a reputation for high-quality sound. Unfortunately, Roland also has a reputation for ignoring gamers and their need to support either the Adlib or Sound Blaster standards.

If you already have a 16-bit Sound Blaster-compatible sound card, the $349 RAP-10 will add wave-table sound to your system, but keep in mind that it will take up another PC slot. The sound will be great, but unless you're looking for a recording contract, you're probably better off with an all-in-one solution. Some, like Ensoniq's $279 SoundScape, give you Sound Blaster compatibility and wave-table synthesis for about half the price of the RAP-10 (See "Sound Judgment," on page 26).

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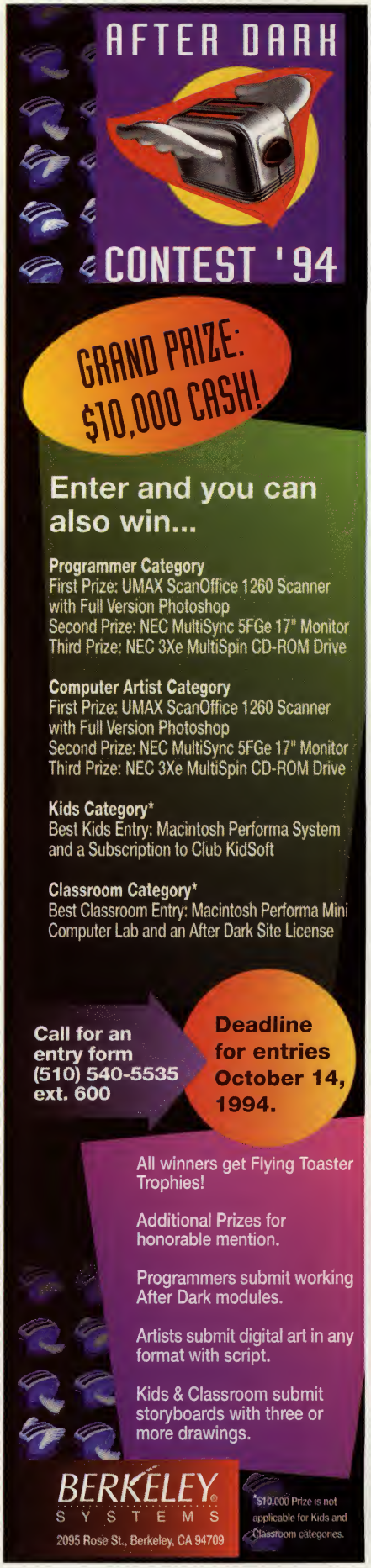

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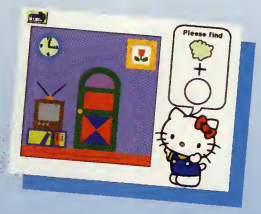

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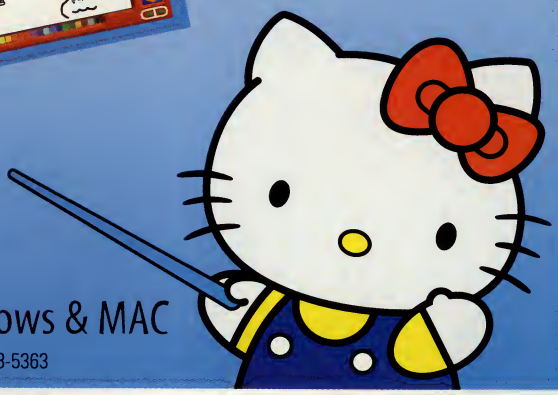

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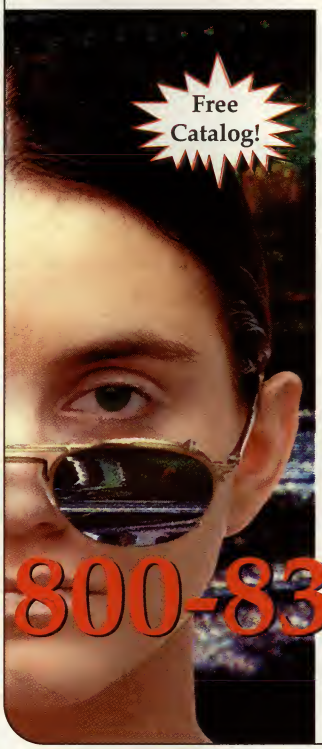

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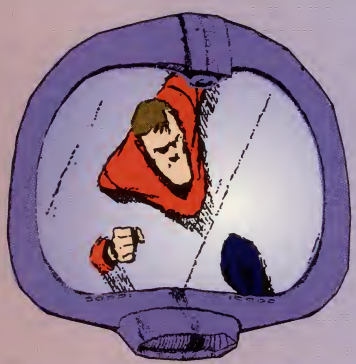

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Game Over

Nolan K. Bushnell

Reach Out and Touch Someone

I'm still thinking about bizarre computer and game interfaces. I thought I'd told you all my crazy ideas last month, but every time I look at the tired, old mouse, joystick, and trackball on my desk I'm reminded of all the missed opportunities in computer control.

There are so many different ways to play with computers that I can't stop with just the galvanic skin controllers for Pong, electric shock handles for Tank, Smell-o-vision, and giant ticktacktoe boards that I described last time. Why quit when you're on a roll? I've also been thinking about three-dimensional pointers, robot control, and virtual reality with a sense of touch.

I'm not the only one bored with run-of-the-mill mice. The folks at MIT experimented with a **Data Glove** for years. The glove works just like an infrared remote control. You simply wear the glove and point to the spot on the screen where you want to move the cursor. To click, just snap your fingers! I saw an early version a long time ago, and it quickly became one of my favorites.

My only problem with the Data Glove is that it ignores the third dimension, depth. A good friend of mine, Ron Milner, improved upon it when he developed the **Air Mouse** a few years back. Looking sort of like a magic wand, the Air Mouse went beyond the standard *x* and *y* axes to let you control movements along the *z*, or depth, axis. You could use the Air Mouse to point deep or shallow as well as up and down or side to side. The Air Mouse, and its associated software, turned the computer screen into a true three-dimensional space. A few products, most notably Logitech's **Cyberman** and Creative Labs' **AeroMouse**, allow 3-D control, but not with the Air Mouse's freedom of movement.

But there's a lot more to exotic interfaces than fancy pointing devices. I did a product called **Tech Force** about six years ago, for example, that operated on a slightly different principle. The game involved a series of small robots that you operated from a radio transmitter control panel. You'd have a panel, your opponent would have another panel, and together you could stage a battle among up to 16 'bots, 8 on each side. In case you were wondering, these robots had their own little cannons and other weapons that you could use to knock out the other guys.

You can think of Tech Force as a sort of three-dimensional chess game, or maybe just a wigged-out Foosball, but you get the idea. You could either play it in real time, in which you hit the number of your robot on the panel to drive him, or you could set up your robots to execute certain, predefined patterns. You could program each robot to go forward two spaces, turn right, and then fire, for example. Each player had up to five moves per turn. We even had an optional audio link to enhance the game with sound effects of explosions and other noises.

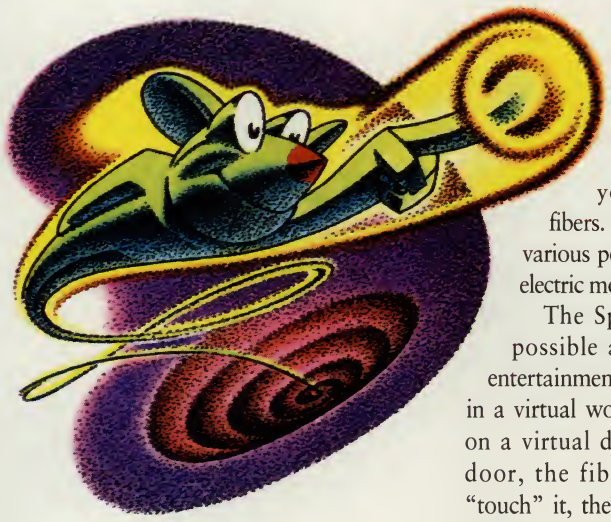


ILLUSTRATION BY ALEX MURAWSKI

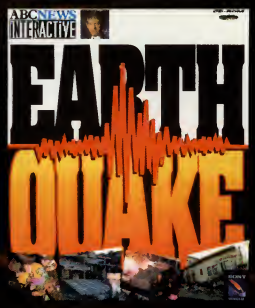
For some people, though, the best interactivity is between your body and the computer. Milton Bradley created an interesting toy a few years back that was essentially a series of body sensors. You could play the drums by slapping your thighs or wrists, pounding on your chest, or patting yourself on the top of the head. And these contacts could be worn anywhere. I always thought it would be fun to have a whole bodysuit that was hooked up not only to send stimuli to the computer but also to receive feedback, so that the computer could send signals you could feel back to you.

A few current products attempt to do that, such as Aura Systems' vibrating **Interactor Vest** (see "See Me, Feel Me, Touch Me...," April, page 19), but they are still crude attempts at what I call the **Spider-Web Suit.** Still on the drawing boards, the Spider-Web Suit would wrap you in a web of electronic fibers. The fibers would connect to various points on your joints with tiny electric motors.

The Spider-Web Suit will make possible all sorts of virtual-reality entertainment. Say you're playing a game in a virtual world and you want to knock on a virtual door. As you reach for the door, the fibers move. But when you "touch" it, the motors powering the fibers lock up, creating the illusion that you are knocking on a real wooden door.

Now all we need is a way to include all these interface ideas in a single device. Then you'd have almost as many options in a game as you do in the real world.

Nolan K. Bushnell invented Pong, founded Atari, and created Chuck E. Cheese. He is currently chairman of Octus, the maker of PTA software in San Diego, California.



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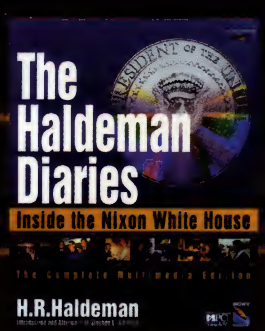

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